# DOMESTIC ENGINEERING

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**Suggestion:**
Cut out; frame neatly; put in show window; change weekly.


A SNAP TO TRADE.

The advent of cooler weather gives a snap to trade of all kinds. As your own business improves perhaps you feel more like giving ours a boost by having that plumbing and heating work repaired and put in complete order. New work can be done cheaply now, as the rise in prices so generally true of other commodities, has not affected plumbing and heating goods yet.


## Prices Going Upward

**The trade must accustom itself to new and higher prices** for raw and finished products. The announcement that "all quotations are hereby withdrawn" will be falling on your desks plentifully enough soon. Possibly before snow lies very deep in the North country, these communications will begin to arrive in increasing volume. There is beginning a readjustment of prices to meet the changed and changing conditions in trade.

* * *

**Raw materials are constantly increasing in price,** and this is true not only in the metal trades, but it is seen in the wool and cotton markets as well. It comes about from two principal causes, the unprecedented demand for goods and the great increase in the production of gold, which, so long as it continues, will constantly raise prices to new levels.

* * *

**These readjustments need not be dreaded** by the merchant or manufacturer with an open mind, alert to see new conditions and courageous enough to be a law unto himself and adapt his business to them. To the timid man, afraid of what the other fellow may or may not do, these readjustments are causing some unnecessary apprehension. He is wondering if the country has capacity enough to absorb his product and that of all the others as well. He may rest serene if his product is well made, for now, more than ever before, is the country able to buy good goods, and, I may say, too, it is in a mood to do so.

* * *

**It may be his product is sold under contract** and to get out even he is tempted to make the quality inferior, or decrease the capacity or weight. Against this sort of a manufacturer I warn the buyer to be on his guard. He has poisoned the well of commerce too often in past years. In this era of commercial prosperity do not allow him to do it again.

* * *

**Do not be afraid of increasing prices,** I repeat. Do not allow them to force you into a hand-to-mouth practice of buying, alike annoying to seller and buyer. I believe that now is the time for a man to be a decisive optimist in deciding on plans for the future. The entire country is rising to higher levels and to a broader basis than it has ever known. We must accustom ourselves, as I said at the beginning of this editorial, to higher prices, and I will add, to greater fortunes. This country is billions of dollars richer when the sun goes down beyond the Golden Gate this evening than it was when its first rays tinged with gold the Goddess of Liberty in New York harbor this morning. In this creation of material wealth which is daily the marvel of the world, let each man in this trade have a fit and appropriate part, being very sure that the increase in material wealth shall be accompanied by a great increase in mental, moral and spiritual worth. **Jno. K. Allen.**

# Some Simplified Plumbing

## FURTHER APPLICATIONS OF THE PROVISIONS OF THE CLEVELAND CODE.

By Jno. K. Allen, Mem. Am. Soc. Inspectors of Plumbing and Sanitary Engineers.

In previous articles* I have pointed out some of the provisions of the new Cleveland plumbing code and their application. This article will continue the discussion and will treat of the general subject of venting. In connection with this article, Plan No. 2 is published on the opposite page, and is only applicable to a portion of this article. Because of this the reader should save all these plans and articles, which when completed will cover the entire code and its application.

### Material Used for Vent Stacks.

Under the code main or branch vent pipes shall be made of iron, brass, copper or lead (Sec. 170), and when iron is used and the diameter is smaller than two inches, galvanized iron must be used (Sec. 181).

### Soil and Waste Vents.

When a loop or main vent or waste pipe is not more than one-half the diameter of an adjoining soil pipe, and reconnected therewith (as is shown with the waste and vent to the two lavatories on the second floor in Plan No. 2), the soil vent need not be increased in size at the point of assemblage. (Sec. 182.)

### Length of Vents from Trap.

The back vent of any fixture trap shall be as close to the trap as practicable, and the developed length of the waste pipe of any fixture from its trap to the vertical vent pipe, or to a horizontal soil or waste branch of a circuit or loop system shall not exceed five feet when plain traps are used (Sec. 183), nor ten feet when resealing traps are used (Sec. 198). On the second floor of Plan No. 2 the lavatory traps, being less than five feet from the vertical waste into which they discharge, do not require to be back-vented. It will be noted that this vertical waste is continued as a vent connecting with the soil pipe stack above the highest fixtures, and receives the discharge from no other fixtures.

On the third floor of Plan No. 2, the lavatory at the right of the main stack has a plain trap, which as its waste is not more than five feet developed length from where it discharges into the circuit or loop waste vent, does not require to be back vented.

Referring to the water closet trap in the same group of fixtures, it will be seen that a waste circuit or loop vent is carried from the closet bend into the soil pipe stack above the highest fixture. Under Section 197 no back vent to this water closet trap is required, as the discharge of the fixture does not exceed the area of the soil pipe stack. In this case the diameter of the circuit waste (from the lavatory) entering the closet bend shall not be less than two inches, and it cannot carry more than two fixtures. It is also provided that the furthermost trap on the horizontal run, the drum trap to the bath, is not more than ten feet distant from the closet bend or from a branch connection. Nor can this drum trap be more than fifteen feet from the main soil pipe nor more than five feet beyond the vertical arm extension of the waste circuit or loop vent discharging into the closet bend.

In connection with drum traps, it may be well to say that the code requires every inlet to a drum trap to be either through the bottom or, if a side inlet, on a line with the bottom, and it shall be either tangential, that is, entering in the direction of a tangent, or bell shaped. The diameter of a drum trap provided with a side inlet shall not be greater than twice the diameter of the inlet, but on a bath tub or on a laundry tray a 4-inch drum trap with a 1½-inch inlet may be used. The clearance between the outer shell of the drum trap and the stand pipe forming the outlet through the bottom of the drum shall not exceed the diameter of the inlet, nor shall it be less than one-half the diameter of the inlet.

On the lavatory on the second floor of Plan No. 2 a resealing trap is used, and in this case no back vent is required.

In Plan No. 2, on the third floor, at the left of the main soil pipe stack, resealing traps are used on the bath and lavatory, and if no more than ten feet from the main stack no back vents to the trap are required. (Sec. 183.)

The laundry trays on the lower floor are wasted into a floor trap, hence there is no back pressure when the house drain is running full and no traps or back vents are required.

### Reconnecting Main Vents.

Excepting for circuit vent systems, all main vents shall be connected at their base to the main waste or soil pipe at or below the lowest branch of fixture fitting, and shall either be extended through

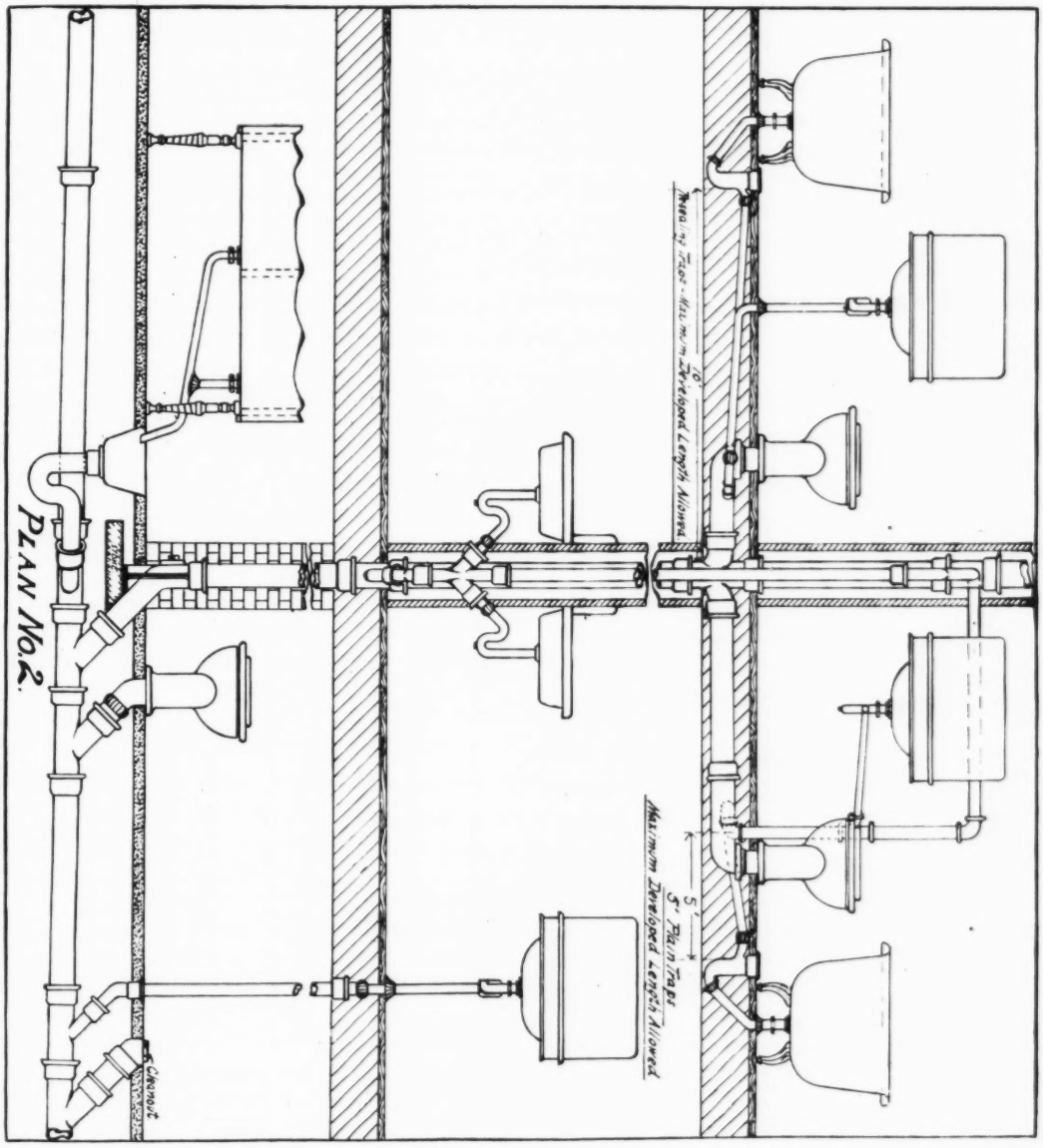
*Published in "Domestic Engineering" for the issues of October 9 and 23, and November 13, 1909.

and above the roof, or be reconnected to the adjoining soil or waste vents at least four inches above the top of the highest fixture. In case the main vent of such soil or waste pipe stack is less than 20 feet distant it may be reconnected with its adjoining soil or waste pipe stack. If more than 20 feet it shall be continued through the roof. If the vertical vent is more than 8 feet away from the soil stack to which it connects it cannot be more than 100 feet high. (Sec. 184.)

GRADES OF VENT PIPES.

The branch vents and back vent pipes shall be graded so they will allow their contents to drip back to the soil or waste pipe by gravity.

In case the discharge of fixtures above exceeds the area of a soil or waste pipe stack, all vent pipes connecting with it must rise at an angle of not less than 45 degrees. This will prevent back flow into the vent openings with consequent inclination to stop up. (Sec. 185.)




Plan No. 2. Showing some of the applications of the new Cleveland Plumbing Code, including some instances where traps need not be back-vented, etc.

VENT CONNECTIONS.

The code is careful in its provisions that all connections between soil or waste pipe and vent pipe lines shall be made with proper size drainage fittings, or sanitary T's or Y's, and that the fittings shall be set so they will not be unduly exposed to back water or to the splash from wastes. In making such connections with horizontal waste pipes the connection shall be taken off above the center line and as near the crown of the pipe as possible, and it shall rise at an angle of not less than 45 degrees to a point above the top of the fixtures. (Sec. 186.)

The limits of a single article will not permit me to exhaust the provisions of the code relating to vents, hence I shall treat in another article, soon to be published, of continuous, circuit and loop vents, and of certain conditions in which back vents are not required.

# Loss of Heat from Uncovered Steam Pipes—II*

BY WM. LEDYARD CATHCART

(Conclusion)

SOME CAUSES FOR THE LACK OF AGREEMENT BETWEEN TEST RESULTS AND THE HEAT LOSSES COMPUTED THEORETICALLY.

It is evident that heat-loss formulæ derived from the results of rigid laboratory experiments on apparatus of limited size and under wholly controllable conditions as to air currents and the exact measurement of the heat abstracted, when applied under the varying conditions of practice, indicate heat losses which will at times prove to be wide of the mark.

While the majority of the tests of Table 1 were not made upon steam pipes forming part of an actual plant, none of them was conducted under conditions as to accuracy which can be considered as comparable with those of Péclet's experiments. Some discrepancy between computed and actual results is, therefore, to be expected. Such a comparison is given in Table 2, where the excess of the actual over the computed losses for the tests in question average about 30 per cent. The principal reasons for this lack of agreement are, as to tests in general:

(*a*) *Air currents not due to convection.* This is a disturbing condition which exists to a greater or less extent in all tests not conducted under the most exactly laboratory conditions. Professor Norton shows from his tests on bare pipes filled with hot oil the effect of the surroundings and position of the pipe in the following table, in which the heat loss is stated in B. T. U. per square feet per minute at a temperature of the oil corresponding with that of steam at 200 pounds pressure gauge:

| Condition and Position of Pipe | Heat Loss |
|---|---|
| 1. Standard condition, hung in centre of room.. | 13.84 |
| 2. Near brick wall between windows..... | 14.26 |
| 3. Hung horizontally in centre of room..... | 12.06 |
| 4. Vertical 10-inch pipe 36 inches long ..... | 13.48 |
| Vertical 10-inch pipe 18 inches long ..... | 14.42 |
| 5. Vertical 18 inches long 10 inches diameter.. | 14.42 |
| Vertical 18 inches long 4 inches diameter.. | 15.20 |
| 6. 8-inch pipe in draught from electric fan.... | 20.10 |

(*b*) *Inaccurate measurement of the amount of the condensate which is properly chargeable to heat loss from the pipe under test.* In general, this source of error exists in but small degree in laboratory tests, since the condensate produced by the attachments of the test pipe is as a rule, carefully estimated; with tests of pipes in service, however, the conditions as to this have often been very different, leading to misleading results. Thus, defective action of the separator will reduce the apparent amount of the condensate, since a part of the latter will pass on, held in suspension by the steam; the leakage of steam traps will allow steam to filter through, to be later condensed, thus unduly increasing the amount of the condensate; finally, while separators are usually covered, drip-pipes and traps

TABLE 2

RATIOS OF ACTUAL HEAT-LOSSES TO THOSE COMPUTED BY PECLET'S FORMULAE: VALUES OF THE HEAT-TRANSMISSION COEFFICIENT $K_3$

| Test No. | Temp.-diff. Steam and Air, °F. | Heat Loss per Sq. Ft. per Hour, B. T. U For Total Temp.-diff. Actual. | Péclet. | Ratio. | per 1° F. Temp.-Diff. ($K_3$). |
|---|---|---|---|---|---|
| 1 | 231 | 596.02 | 502.44 | 1.19 | 2.58 |
| 2 | 231.2 | 642.74 | 566.38 | 1.14 | 2.78 |
| 3 | 273.2 | 841.46 | 681.05 | 1.23 | 3.08 |
| 4 | 305.2 | 1019.37 | 827.16 | 1.23 | 3.34 |
| 5 | 156.7 | 360.63 | 287.82 | 1.25 | 2.301 |
| 6 | 197.5 | 433.9 | 393.35 | 1.10 | 2.197 |
| 7 | 199 | 528.41 | 379.13 | 1.39 | 2.655 |
| 8 | 213.4 | 574.16 | 438.69 | 1.38 | 2.691 |
| 9 | 218. | 595.7 | 448.41 | 1.33 | 2.732 |
| 10 | 235.6 | 687.45 | 492.65 | 1.39 | 2.918 |
| 11 | 243.6 | 697.19 | 519.21 | 1.34 | 2.862 |
| 12 | 246.8 | 785.4 | 534.24 | 1.47 | 3.182 |
| 13 | 259.9 | 753.87 | 582.13 | 1.29 | 2.901 |
| 14 | 260.1 | 775.9 | 576.24 | 1.35 | 2.983 |
| 15 | 268.8 | 728.45 | 563.49 | 1.29 | 2.71 |
| 16 | 272.4 | 859.6 | 613.39 | 1.40 | 3.156 |
| 17 | 273.1 | 807.4 | 606.55 | 1.33 | 2.956 |
| 18 | 288.3 | 933.2 | 660.77 | 1.41 | 3.237 |
| 19 | 304.2 | 962.35 | 748.31 | 1.29 | 3.163 |
| Avgs. | 246.22 | 714.91 | | 1.305 | 2.864 |

*Condensed from "Cassier's Magazine." The first part of this article as published in "Domestic Engineering" November 20, 1909.

frequently are not, and the effect of the combined cooling surfaces of the two latter in adding to the weight of steam condensed may be marked.

For example, Richter, in investigating the question as to whether superheated steam could entrain water, considered the results of thirty-two of the most important tests in which the degree of superheat was apparently great enough to prevent the formation of condensate in the pipe. He assumed an average amount of cooling surface for the drips and traps, and found that, in seventeen of these tests, this assumed surface was sufficient to produce the entire amount of the condensate reported as chargeable to the steam pipe.

(*c*) *Unsuitable test apparatus.* Some experiments in designing test apparatus, seem to have disregarded the fact that radiation is a mutual action and, further, that convection currents from two adjacent heated bodies may conflict. Any apparatus for this purpose whose operation involves the simultaneous cooling of two or more pipes, relatively close together and without effective screens between them, is incapable of giving accurate results.

(*d*) *Minor causes.* Other reasons for the discrepancy between theory and practice in estimating the heat losses of steam pipes are: inaccurate measurement of the loss due to flanges, valve chambers, etc.; taking the temperature of the outer surface of the pipe as that of saturated steam, and relying on surface measurements of pipe metal or covering, this method being untrustworthy.

CORRECTION FROM PRACTICE TO BE APPLIED TO THE HEAT LOSSES OF BARE PIPES CONVEYING SATURATED STEAM, AS COMPUTED BY PECLET'S FORMULAE.

The excess of the actual over the computed losses, as shown in column 5 table 2, have been plotted as percentages in Fig. 4 on the corresponding temperature differences and a mean curve drawn. In estimating the heat loss of a bare pipe, at a given temperature-difference and under average conditions, the loss, as computed by Péclet's formulæ, should be increased by the percentage given by this curve.

This method is far from being free from objections, since the percentages plotted include not only the effect of air currents, but the possible errors of investigators as to the amount of the condensate charged to the pipe. It is, however, the best means available of making a reasonable approximation. It will be understood that this curve applies only to bare pipes between 2 inches and 8 inches in diameter.

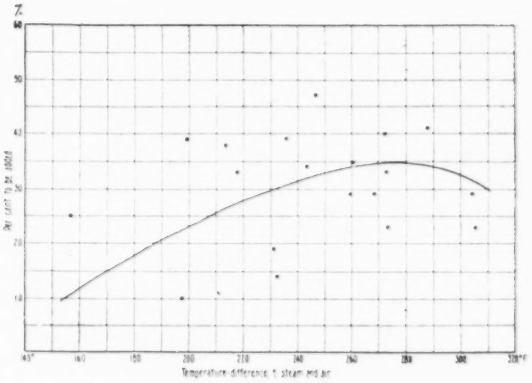


Fig. 4. Diagram showing excess of actual over computed heat losses plotted as percentages.

EFFECT OF DIAMETER OF PIPE ON HEAT LOSS.

These tests give somewhat discordant results as to the effect of the pipe diameter on the heat loss, although in general the loss decreases as the diameter increases. The mean values obtained are:

| Internal Diameter of Pipe, Inches. | Conduction Factor, K[1] |
|---|---|
| 2 | .977 |
| 2.76 | 1.006 |
| 3 | .981 |
| 5 | .758 |
| 5.91 | 1.007 |
| 7.09 | .915 |
| 8 | .84 |

CONDITIONS AFFECTING THE LOSS OF HEAT OF SUPERHEATED STEAM DURING TRANSMISSION.

The pipe losses of superheated steam are:

The pressure loss,

The loss of temperature, and

Partial condensation.

If the degree of superheat be low; the first of these is not essentially a heat loss. Tests on pipes conveying superheated steam are much more difficult in execution than the corresponding tests with saturated steam. The main reason for this is that, in the former case, the velocity of the steam is a factor in producing the heat loss, and hence tests should be made only on moving steam and at the velocity at which it is desired to find the heat loss. This condition makes the problem complex. It may be well to consider its factors:

(*a*) *Absolute and proportionate heat losses.* The absolute heat loss of a steam pipe is the loss per square foot per hour from the outer surface. What

has been termed, somewhat loosely, the proportionate loss is the loss of heat per pound of steam transmitted. If there be two uncovered pipes of the same diameter conveying saturated steam of the same pressure and quality, but with the velocity of the steam differing in the two cases, the absolute loss of one pipe will be the same as that of the other, but the proportionate loss will evidently be less for the pipe in which the steam moves at a higher velocity. Assume now that the pipes convey superheated steam, the pressure and temperature at entrance being the same in each pipe, but the velocities differing; then, while there will still be a reduction in the proportionate losses at the higher velocity, the absolute losses will not be the same for the reasons given below.

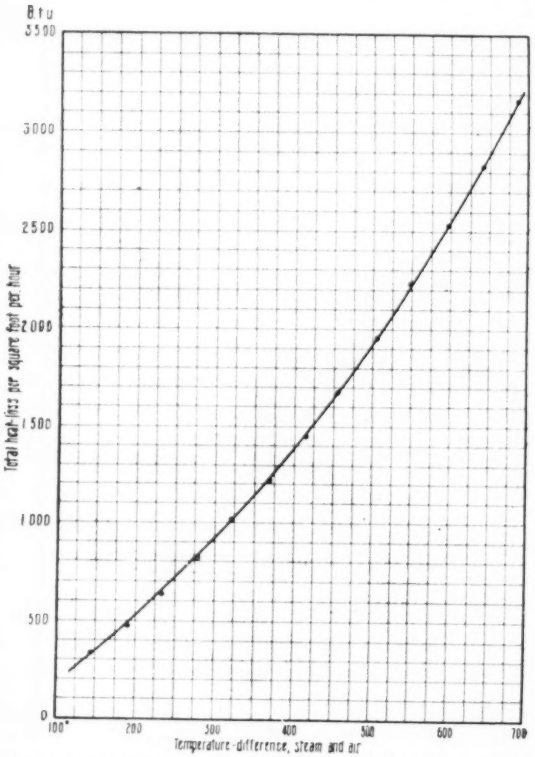



Fig. 5. Absolute heat losses with superheated steam. Diagrammed from Table 3.

(*b*) *High and low degrees of superheat.* Highly superheated steam simply loses some of its superheat during transmission and no part of it is condensed. The only method of absolute accuracy for determining the heat losses of such steam is to find the average quality at entrance to, and exit from, the pipe—a process which is difficult, since it involves temperature measurements at various points in the cross-section of the column of steam at these two locations.

When the degree of superheat is low, an absolutely accurate determination of the heat loss is practically impossible, for, although the steam temperatures may be observed, as before, the action is further complicated by the fact that a section of the pipe will be cooled below the temperature of saturation, a portion of the steam will be condensed, some of the steam will be entrained by the swiftly moving steam, and a part of it will be carried through the separator, thus escaping measurement.

(*c*) *Effect of steam velocity.* The temperature of the pipe is the main factor in causing the heat loss; while this temperature depends primarily on that of the steam, it is also influenced markedly by the velocity of the steam, whose effects are somewhat complex. Thus:

At high steam velocity, the steam in its swift motion has little time to cool, and hence the proportionate loss is less than at low speed; but the temperature-fall from the centre to the circumference of the pipe must also be less and, as a consequence, the temperature of the pipe is higher, the temperature-difference between it and the air is greater, and the absolute loss more than at low velocity.

At low steam velocity, these effects are reversed. The steam has more time to cool and the proportionate loss is greater; but the fall of temperature across the cross-section of the column of steam is greater also, and hence the temperature of the pipe, the temperature between the steam and the air, and the absolute loss are less.

### HEAT LOSSES OF BARE PIPES CONVEYING SUPERHEATED STEAM PER SQUARE FOOT OF OUTER SURFACE OF PIPE PER HOUR.

It has been shown that the heat losses of a bare pipe depend primarily on the temperature of the latter, and that this temperature and the coefficient of external conductivity from the steam to the pipe depend, with superheated steam, not only on the temperature of the latter, but upon its velocity. It is apparent that, with the same steam temperature, there may be absolute heat losses which will differ widely at different velocities of the steam. Hence, tests based on steam temperature only, or on steam velocity only, are of no service.

Owing to these conditions, which make the number of possible combinations indefinitely large, and

to the lack of experiments on the subject, it is not possible to assemble test results which can be plotted, like Fig. 3, as a general curve covering all cases within their temperature limits. The only available tests on bare pipes which were made with sufficient accuracy to permit definite deductions are those conducted by Eberle under the auspices of the Verein deutscher Ingenieure. These tests were made on a pipe 700 mm. (2.76 inches) internal diameter and 87 feet 2 inches long, first at a steam velocity of 5,906 feet per minute, and again at velocities between 1,772 and 1,969 feet per minute; the absolute (average) pressure of the steam was, in both series, about 96 pounds per square inch; the steam temperatures (mean) were 578.7 and 456.3 degrees F., respectively; the air temperature was 51.8 degrees F.

On the basis of the results of the first series of these tests, Eberle presents the data given below in Table 3 as fairly representing the action of superheated steam for the temperature range tabulated, at a velocity of 4,920 feet per minute, and with a

TABLE 3.

HEAT-LOSSES OF BARE PIPES TRANSMITTING SUPERHEATED STEAM; STEAM VELOCITY, 4,920 FEET PER MINUTE; COEFFICIENT OF EXTERNAL CONDUCTIVITY, STEAM TO AIR EQUALS 30.75; AIR-TEMPERATURE, 68° F.

| Temperature F. of Steam. | Pipe. | Temperature-Diff Between Steam and Air. | Pipe. | Heat-Loss per Sq. Ft. of Outer Surface of Pipe per Hour, B. T. U. |
|---|---|---|---|---|
| 212 | 201.2 | 144 | 10.8 | 343 |
| 257 | 240.8 | 189 | 16.2 | 485 |
| 302 | 280.4 | 234 | 21.6 | 642 |
| 347 | 320 | 279 | 27 | 823 |
| 392 | 359.6 | 324 | 32.4 | 1018 |
| 437 | 397.4 | 369 | 39.6 | 1225 |
| 482 | 435.2 | 414 | 46.8 | 1450 |
| 527 | 471.2 | 459 | 55.8 | 1697 |
| 572 | 509 | 504 | 63 | 1956 |
| 617 | 545 | 549 | 72 | 2232 |
| 662 | 579.2 | 594 | 82.8 | 2531 |
| 707 | 615.2 | 639 | 91.8 | 2841 |
| 752 | 649.4 | 684 | 102.6 | 3170 |

value of 30.75 for $k_1$, the coefficient of external conductivity of the steam to the pipe metal. The absolute heat losses given in this table are plotted in Fig. 5.

With regard to the data of Table 3, it should be observed that the tests were made on one pipe only, thus preventing investigation of the effect of change in pipe diameter on the heat losses, but the effect is of minor importance, and the data may be accepted as giving general indications of value as to the action of superheated steam within the limits covered by the table.

# Vacuum Cleaning

## ANOTHER CHANCE FOR THE PLUMBER

BY CHAS. B. STARKEY.

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Another household duty is soon to become a back number, and before long the good wife with her "sweepin' broom an dust cloth" will be seen no more performing the duty in that manner, for vacuum cleaning and cleaners have arrived and are here to stay.

This business has grown by leaps and bounds during the past five years, and the modern apartment house or sky scraper that is erected minus its vacuum cleaning outfit is simply not up to date. It is said that the beginning of this science was discovered accidentally by a railway porter who made use of a hose and compressed air to blow the dirt out of the coaches he was cleaning. The later machines have reversed the action of the air, and make use of a vacuum to pull the dirt into various receptacles made to contain it.

Generally speaking vacuum cleaning is the means used in renovating the inside of a building, and also its furniture, etc., by making use of a strong suction of air operated by a machine specially constructed for the purpose.

To this machine is connected a hose at the movable end of which there is a special attachment called the "renovator." The power is applied and the machine begins working and the air is pumped in through the crack or slot in the "renovator," as this "renovator" is drawn along the surface of any carpet, rug, piece of furniture, portiers, walls, clothes or horses.

### DIFFERENT CLASSES OF VACUUM CLEANERS.

I have noticed in my observations at least three different classes of these cleaners, producing similar effects, and they may be classed as follows:

1. Small portable cleaners for the house.
2. Portable cleaners mounted upon wheels and drawn about by a team of horses to any part of the city. These cleaners can stand in the street or alley and lines of armored hose can be run into the building while the cleaning is being accomplished.
3. Stationary outfits installed in the building as completely as a heating system, an opening being left in each room, or at least upon each floor to which a hose may be attached for operating purposes.

SOME FEATURES A GOOD CLEANER SHOULD POSSESS.

There is one idea which one wants to get fixed firmly in the mind, and that is that **the vacuum does not do the cleaning. It merely puts in motion the air which is itself the cleaning agent.**

The machine should be so constructed as to have its parts easily accessible.

It should be powerful enough in action to thoroughly remove the dirt and should not be constructed in a complicated manner.

The cost of the apparatus should not be prohibitive, and it should furnish a good suction, at a reasonable rate for the expenditure. If of the portable type, it should not be clumsy to handle, nor heavy, and if of the stationary style it should not be too expensive to operate.

ADVANTAGES POSSESSED BY EACH TYPE.

The portable machine is small, easily moved from place to place, and in ordinary buildings or apartments the price is not so great but that each tenant may possess his own machine which can be operated whenever he pleases during reasonable hours.

The stationary outfits are of service to large hotels and office buildings, removing from the room the dirt and dust, to the tank or receiver in the basement, and in some cases this refuse is thrown into the sewer at once by a stream of water utilized for the purpose, making a most efficient type of apparatus. One should notice whether or not the suction at the nozzle is constant and in proportion to the size of the orifice. Too much force at this point is liable to do damage to the various articles to which it is applied and will take off the nap from carpets. Such apparatus not only removes the dirt but also injures the goods.

BUSINESS FOR THE PLUMBER.

The plumber and fitter should "butt into" this game and take on this specialty as there is money in it if gone after in the right way. It is directly in the line of the work done by the craft—at least the installation of the stationary plants—and much more profit should be drawn to our craft from this line of apparatus than is the case today.

The systems are not difficult to install, they are a distinct benefit, and a general improvement in this great age of progress, and the members of our craft should get in line and join the procession of live ones who are gradually getting wise as to their true opportunities afforded in enlarging the scope of one of the best businesses which exists today—a business which is destined to occupy a very much more important and prominent place in the world's progress, and that within the near future.

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# Carelessness

## WHAT IT WILL DO FOR A HEATING PLANT

By Phoenix.

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In several articles previously written I have frequently alluded in various ways to carelessness. I want to "bunch" the business now and give a few concrete examples relating to the heating business and show just how much in actual dollars and cents certain acts of heedlessness have cost in some instances. These are actual cases of inattention that have come under my own observation in various places within the past few years and I believe that they are worthy of attention. They are given because too often, the sinner fails to realize what may be the results of his want of attention to the duty at hand for which he is held responsible. I will take an easy one first, showing where the lack of a little precaution caused a whole bunch of trouble and nearly ended in a law suit.

A hot water heating job was put in a ten-room house for a retired business man in a small city not a thousand miles from where Washington crossed the Delaware.

The risers to the second story rooms were concealed and when the job was tested out it worked very nicely with the exception of the radiator in the front room directly over the parlor.

For some reason, not apparent at that time, this radiator would not heat. Now the contract called for a plant that would show a circulation of 140 degrees and heat the building thoroughly. The connections on the main were changed without producing any effect. The branches were altered and still no effect. Finally it was decided that something had lodged in either the supply or return pipe to the radiator. The supply was tested first and sure enough there was a stoppage. The full waterworks pressure was applied to this pipe but the obstruction would not budge. The owner insisted that the pipe be removed and this was finally accomplished—the pipe being cut in several pieces. It was found that some one had driven a wooden plug in the pipe.

The heedlessness of the fitter in not looking, or blowing through that hot water riser cost the boss something over $36.00 before the job worked and nearly, as I remarked before, ended in a law suit on account of the damage that the fitter caused to the parlor walls in getting out the plugged riser.

The second instance I recall was more serious and threw about forty men out of work for three days. It happened in zero weather in the month of January. It was in a small factory which was heated by steam, the boiler being cast iron and bricked in.

The janitor got down rather late one morning and

in order to rush the fire he left the ash pit door wide open and went about his other duties. Of couse he forgot entirely that open draft door, and as a result the boiler soon took on a fine head of steam and the safety valve ere long got in its action and the result was that the water in due time left the boiler.

Now when the janitor finally found out how things were going he got rattled and at once let some cold water into the boiler. Result, a cracked fire pot. It took two days for a new fire pot to arrive **by express** and it took six men twenty-four hours with no let up in the work to get things into shape so steam could again be started.

The amount of money lost through this piece of carelessness amounted to something, $488, not considering the profit the manufacturer lost upon the men's time for three days; **and just because the janitor forgot to close the ash pit door.**

The third case happened in a part of the country where the mercury frequently drops out of sight in an off-hand manner and the "zephyrs" from the Saskatchewan country come bowling down merrily at the rate of about fifty miles an hour. The fitter ran his water supply pipe within a few inches of a cellar window. He did not have to do so, but it was easier and shorter, so in it went with a rush.

You know what happened. The window blew open one night and the water pipe froze and bursted; the cellar was filled with water. They had a small sized skating rink the next day.

I will not attempt to repeat the owner's remarks. The family had to go to the hotel while the job was being repaired, and this experience cost the owner over $56.00 because the fitter did not stop to consider that the water pipe was too near the cellar window.

Here is one that happened in the Keystone state and was a case of where the fitter neglected to consider that two two-inch returns could not be successfully connected together into another two-inch return to the boiler, especially when each of the returns was doing extreme full duty.

But he so put in the connection. Did that job hammer and pound? Why every radiator on the first floor fairly acted like a dancing bear, and you could hear that job pound half a block away. The boss came up and saw it, made a few suggestions **as to pipe sizes, etc., etc.,** and more comments upon the general intellectual capacity of that particular fitter, and this job was fixed by cutting in and supplying a larger return pipe to the boiler. Cost $9.20.

Here is one that happened in one of the finest residences of a large city in the central states.

"Pete" was about as good an all around steamfitter as ever came down the pike.

One day the boss sent him up to this residence to detach the radiators as they were to be bronzed and then replaced, before the family returned from their summer cottage.

Now "Pete" took the radiators off in good shape and returned to the shop. In due time the radiators were bronzed, **but not connected again to the supply valves.**

Some time after the shop got a hurry-up call to have the plant in order and the boss sent "Pete" to the residence to fire up the job and see that everything was all "O. K."

"Pete" went to the house and built a fire and got up steam when he surmised something wrong and did **what he should have done in the first place, viz., looked the job over.** He found that the radiators had not been connected. The party who bronzed them did not "hook them up" again, and the house was filled with steam, and water was spouting from several steam radiator valves that had been left open.

Well! by the time that everything was cleaned up and made right, the boss was out a trifle over $40 and "Pete" lost his job, just because he forgot to look the job over before he built a fire in the boiler.

Now these are common every day happenings. I presume that many more startling could be related where some body got "asleep at the switch" and with serious results to all concerned. It is a curious fact that some of the best men sometimes make the worst breaks when entirely unlooked for, and this only proves that in the heating business the utmost care should be used upon all occasions.

I have not alluded to the carelessness which causes many an annoying leak on a job, because a good fitter **is supposed** to know enough to see that only reliable threads and sound fittings go into the job, nor have I in this place dwelt upon the neglect of the man who would not be sure that all the mains and branches had the proper pitch.

A foreman takes these things for granted, viz: that the fitter will be wise enough to do what is right in such matters. But just the same the foreman gets badly left in that respect many times, and finds that his confidence has been misplaced.

This carelessness is a bad proposition for all concerned. It not only makes the customer suspicious of the job, but he loses confidence in the shop that has the contract; and worse than all, he gets into his mind that steam and hot water systems are not all that they are said to be, and require constant repairing to keep them in working order; whereas the reverse is the true facts of the case.

A good job requires very little attention and is seldom in need of repairs. Many house heating, steam and hot water jobs have been run for from fifteen to eighteen or more years and never cost the owner a dollar for repairs aside from a new smoke pipe now and then.

What is the remedy for this carelessness which causes, at times, such a loss along many different lines? The answer can be given in one word spelled with six letters, and that word is **System.** Have a regular method of doing work and **see to it that this method is carried out as per definite instructions.**

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### Just the Place.

Dubbins—Do you know where I can find a lot facing south?

Stubbins—Why not try around the North Pole? That's a very likely place?—Judge.

# Should the Main Drain Trap be Abolished?

[Numerous articles and discussions on this perennial topic have been published in the trade press. The retention of the trap has its advocates; its abolition is favored by others. Perhaps the best presentation of the arguments for and against, is this by J. J. Cosgrove, member of the American Society of Inspectors of Plumbing and Sanitary Engineers, and originally printed in "Modern Sanitation."]

### Arguments in Its Favor.

Since the main-drain trap was introduced into plumbing practice it has caused more discussion and awakened more controversies than any other part of the drainage system. Those who are in favor of the main-drain trap point out that **it is a safety device** which cuts off each separate drainage system from the street sewer, thereby preventing the pipes within the building from being charged with sewer air from the street mains. They object that, if the main-drain trap were removed, the soil and waste stacks in each building would become sewer vents, and protest that individuals should not be made to ventilate the public sewers through the roofs of their buildings, but that special provision should be made for the purpose.

### Opposing Arguments.

The opponents of the main-drain trap, on the other hand, contend that the **sewers would be much better ventilated if the main-drain trap were omitted,** and claim that interposing **a trap** where the house drain enters the building **invites stoppages** at this point, besides **fouling the house drain** by checking the flow of sewage toward the sewer. They are sweeping in their condemnation of what they consider an unsanitary device and wish to simplify the construction as well as reduce the cost of installation by prohibiting the main-drain trap and its complement, the fresh-air inlet.

### Both Sides Right.

So far it does not seem to have occurred to the controversialists that **both may be right,** yet such is the case. Whether or not a main-drain trap should be used is an **engineering problem which must be worked out in each city** after a full and careful consideration of all facts bearing on the case; and the **main-drain trap might be desirable in one city, while its use would be objectionable in another** not many miles away..

### The Function of the Trap.

Clearly to understand under what conditions a main-drain trap is neccesary the **function and object of the main-drain trap** must be understood. By **interposing a water seal** where the main house drain enters a building the **impure air from the street sewer is shut off** from the drainage system; then, by **installing a fresh-air inlet, circulation of air within the drainage system is maintained,** so that a collection of deleterious gas is impossible and a leak in the drainage system would prove harmless. Of course, it will be readily understood that if the air in the street sewers were as fresh as that in a drainage system provided with a fresh-air inlet there would be no necessity for the use of a main-trap, for the air of the sewers would be no more objectionable than that in the drainage system, and it would be **poor engineering practice to interpose an obstruction of any kind, however slight, in the drain unless it performed some good office.** Further, it would entail an **extra cost for the main-drain trap and fresh-air inlet,** without a compensation advantage, besides **necessitating a fresh-air inlet,** which sometimes belches forth unpleasant odors in close proximity to doors, windows and porches.

### Different Conditions.

There are several different conditions under which the use of main-drain traps may be considered, whether or not the traps should be used depending on the conditions which obtain in each case at the time. For instance, **there are the cities where sewer systems are just installed and drainage systems are about to be connected to them;** next, there are **old sewer systems which have been in service for many years in thickly populated cities and already connected to the drainage systems of most of the buildings in the district;** finally, there are the problems connected with **the installation of sewers and drainage systems in extremely cold climates.**

### New Sewer Systems.

Each year, throughout the world, numerous cities construct sewer systems. **If at that state of proceedings the subject is given proper consideration the problem of whether or not to use main-drain traps will right itself.** When the sewer system is completed the pipes and conduits are perfectly sweet and clean, no organic matter, outside of that contained in the ground water which seeps in, having passed through them. **If, then, the use of main-drain traps is dispensed with in such cities each drainage system connected to the sewer will serve as a vent, and as the area of the various house drains will far exceed the area of the main sewer and possess hundreds of times the capacity of the main street sewers it will stand to reason that the air within both the street sewers and the drainage systems will be as pure, chemically, almost as the air of the streets, and far more fresh than in a drainage system cut off from the street sewer by a main-drain trap and provided with a fresh-air inlet.**

### An Example.

Take, for instance, a concrete example: In the city of New York 25 feet front is considered a city lot and on each lot there is erected a building. These buildings are all connected to the main street sewer with either 5 or 6-inch house drains. In a block, then, 200 feet in length, counting both sides, there would be a total of sixteen vent pipes 5 inches or more in diameter, with a combined area of 314 square inches, assuming that they were all of the smaller size. Outside of main sewers and trunk sewers 18 inches would be considered a good size for a branch street sewer. Perhaps 12 inches would be a fair average; but, assuming a street sewer to be 18 inches in diameter, it would possess an area of 254 square inches, or 60 square inches less than the combined area of the house drains connected to it. **Just consider the ventilating effect of such a system if the main-drain traps were omitted.** To each block of street

main there would be a combined area of **ventilating flue larger than the street sewer.** Look at it in another light: In each block of 200 feet there are sixteen house sewer connections—that is, for each 12½ lineal feet of sewer there is a 5-inch vent pipe extending above the roof of a building. If two 80-gallon galvanized-iron range boilers were placed end to end they would show, graphically, the small portion and size of sewer that would have to be ventilated by each 5-inch house sewer and vertical stacks. If then, when a new system of sewers is laid out in the city, or if when an old system of sewers is extended to a new district, that city or district **did not require the installation of main-drain trap, the air in the drainage system would be purer; the construction would be simplified; the installation cheapened;** and from a sanitary and engineering standpoint, the system would **be better than if main-drain traps were used.** There would be **no water seal to check the flow or invite stoppage at the front wall of the building; no foul air would be discharged from the mouth of the fresh-air inlet,** and, as the air in the sewers would be almost as fresh as that in the streets, **interposing a trap would prevent circulation and allow the accumulation of gases of decomposition and fermentation.**

### A Safe Rule to Adopt.

It may be laid down, then, as a rule which may safely be followed that **the main-drain trap is better omitted in all cities where new sewers are constructed, or in those sections of old cities to which sewer systems are extended.**

### In Other Conditions.

In closely built-up city districts conditions might or might not be different, depending on the system in vogue up to that time. If main-drain traps and fresh-air inlets have not been used in that district or have been used only in special cases the conditions would be the same, almost, as if a new sewer **were just put in;** and if the various drainage systems are well ventilated by stacks extending through the roofs, and perforated manhole covers are provided at intervals along the line of the street sewers, **there is no good reason which can be advanced why main-drain traps should be insisted upon.** Omitting them in all cases where drainage systems are subsequently installed will insure a better ventilation than obtained before, while installing main-drain traps would tend to the strengthening of the air by the various systems contributing their share of organic matter to the sewers without carrying off the proportionate share of gases.

If in the closely built-up districts main-drain traps have been the order and all or most of the drainage systems are provided with main-drain traps and fresh-air inlets conditions probably would be different. In that case it is probable **that the concentrated gases in the street sewers would be stronger than in the drainage systems cut off by main-drain traps and provided with a plentiful supply of air.** Under such conditions, then, it would seem the better practice to **require the installation of main-drain traps, but even then it is questionable if the practice could be approved unless a chemical analysis of the air of the sewers demonstrated that it was not only stronger but enough stronger than the air in isolated drainage systems to warrant such a requirement.**

### Paving of Streets Considered.

If in closely built-up districts where main-drain traps are required **the surface of the street is paved with asphalt or any other impervious material the requirement of main-drain traps must be approved.** Under such conditions **leakage of illuminating gas** from the gas mains will **charge the main sewers with an explosive mixture, which can best be kept out of the drainage system by interposing main-drain traps in the house drains.** Indeed, there are conditions under which main-drain traps are desirable even in cities where, as a rule, they are not installed. In the vicinity of gas works, chemical works or garages, where chemicals or gases either of a poisonous or explosive nature are discharged into the street sewers, **the better practice would be to require main-drain traps within certain limits,** so that the inflammable or dangerous gases would travel some distance and become sufficiently diluted with air to be harmless before being permitted to pass through a drainage system. It will thus be seen that not only must the problem of whether or not to use a main-drain trap be worked out for each city, but, furthermore,

A promising young plumber of Reading, Pa., Ralph S. Fisher, the two-year-old son of Chas. K. Fisher, whose plumbing and heating establishment is located at 1154 North Tenth street, in that city. This little plumber will use nothing but high-grade goods—notice the heavy brass goods he holds in his hands—and it seems to make him a winner from the start, as he is the youngest depositor in one of the local banks. From photograph by our Mr. O. T. Carson.

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HONEYWELL HE
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it should be considered when designing every plumbing system.

### Each Case Should Be Considered.

The practice of **following blindly a method** adopted in another locality **cannot be approved,** and **copying of plumbing codes by one city from another does not always give the degree of satisfaction that would be obtained by remembering that every installation is a law unto itself,** and the conditions which are obtained in one city are seldom or never exactly similar to those in another.

### In Cold Climates.

In very cold climates, such as the northern part of the United States and Canada, where a blanket of snow lies on the ground during several months of the year an entirely different set of conditions is presented for consideration. In such climates the perforated covers used on the top of sewer manholes for ventilation are of little or no use during the cold weather. Snow falling on the covers is melted by the heat of the gases within, the water freezes and the breathing places for the sewer are completely stopped. The stoppage of the manhole covers then become apparent in two ways: as air cannot escape from the sewers when the various discharges are entering there is a tendency for the drains to be air bound, which becomes noticeable in some sections more than in others; and in the second place, as there is no ventilation or circulation of air through the sewers, the gases become concentrated and dangerously strong, particularly if there be an infiltration of illuminating gas.

This can all be avoided and the double purpose effected of ventilating the sewers (which nominally is a municipal duty) and decreasing the cost of installation by **omitting the main-drain traps and allowing the sewers to breathe through the vent stacks above the house tops.** Under such conditions there is no gainsaying that **main-drain traps are a menace to the safety of the citizens more than a safety appliance,** and in cold climates, where the manhole covers are liable to be covered with ice, the **better practice by far is to omit entirely the main-drain traps and allow the drainage systems to vent the sewers.** This practice is often objected to, not from sanitary motives nor for structural reasons, but on the political grounds that no man should be made to ventilate the street sewers through his private property when ventilation of the sewers is a municipal duty. This position, however, is **untenable as well as unreasonable.** If property owners were required at their own expense to run a special pipe through the roofs of the buildings for the sole purpose of ventilating the sewers the objection would be better founded, but even then, would not be wholly reasonable. But no such unreasonable demand is made upon them. On the contrary, instead of increasing the cost to the householder by omitting the main-drain trap and doing away with the fresh-air inlet he is saved a considerable sum, and **a good citizen should not object to incidentally bettering the conditions of a public utility when by doing so**

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he not only betters his own condition but effects a saving at the same time.

### Legal Rights of Citizens.

Even though there were no saving effect, but that, on the contrary, it imposed an extra financial burden on the property owner, the city would have the right to ventilate the sewers through the soil and waste stacks of the various buildings. At public expense and for the benefit of the entire community the sewers are constructed. If a householder then wishes to avail himself of the benefit of the sewers he is entitled to that privilege, provided, and only provided, he does not exercise the privilege to the injury or inconvenience of others. By discharging his impurified sewage into the street sewers, without making provision to take care of an amount of gas equal to that arising from the decomposition and fermentation of the sewage so discharged, he imposes this extra burden on his neighbors or on the community at large. That being true, the community is privileged to deny to that individual the rights of community unless he will act in an unselfish manner and bear his share of the burden of ventilation.

### As an Engineering Problem.

But it is the engineering more than the political features of the case that we are most interested in—whether the main-drain trap can be omitted without weakening the system, not whether the householder can legally be compelled to use his drainage system as a vent for the street sewers. From all the evidence at hand it would seem that **in most cases the plumbing work would be bettered from a sanitary standpoint, simplified from a construction standpoint and cheapened in the installation by omitting the main-drain trap and doing away with the fresh-air inlet,** while the condition of the public sewers would be vastly improved thereby. That being true, the question naturally arises, should the main-drain trap be prohibited? The answer to that question is unqualifiedly No, for even in cities where main-drain traps are not used conditions might be such in some cases, as previously pointed out, that traps would be desirable, and if any such conditions arose it should be within the discretion of the designer to use one, or not, as his judgment dictated.

### When They Should Be Required.

On the other hand, the installation of **main-drain traps should be required only in the exceptional cases where chemical analysis has demonstrated that the air of the sewer is much stronger than that of the drainage system.** Even then judgment must be exercised, for if that condition of affairs obtained in a very cold climate where the sewer vents are closed in the winter, instead of aggravating the evil by requiring main-drain trap it might prove advisable to require the removal of the traps already installed, even though the work had to be done at the expense of the municipality.

### Outlived Its Usefulness.

Generally speaking, **the main-drain trap has outlived its usefulness.** It was ushered into practice early in the

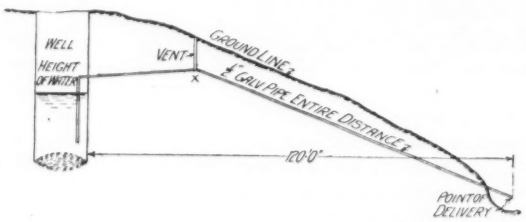
history of modern plumbing design, when sewers were not as well scoured as at present and the drainage systems within buildings were not as thoroughly ventilated. At that time they did untold good; but time progresses and plumbing practice must progress with the times. To that end it is well to hold up to view different parts of plumbing installations, examine them closely and analyze the functions carefully. Then, if found wanting, drop them from practice.

## Questions and Answers

**This department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.**

### A DIFFERENT OPINION ON THE SYPHON QUESTION.

261. **Chicago, Ill.**—To the Editor of "Domestic Engineering." Sir: On page 92 in your issue of October 23 in "Questions and Answers," I think that I can add something for the benefit of "F. C." of Schuylerville, N. Y. It would be a safe guess that "F. C." bushed




Sketch by "F. C.", of Schuylerville, N. Y., showing syphon which grows tired after working three hours.

the pipe down to ¼ inch at the point of delivery. Now if he will bush the pipe to ¼ inch at the end that sticks into the water in the well I believe he will have no further trouble. **D.**

### HOW ABOUT TRAP SEAL EVAPORATION?

270. **Washington, D. C.**—To the Editor of "Domestic Engineering." Sir: Are we working along the best lines and theories in the installation of modern plumbing?

If we grant that all fixtures will be kept in continual use we must admit that the present methods approved by the authorities of large cities are indeed very good, but we are often forced to believe that there is no consideration given to the fact that those fixtures may not be used for months at a time and what efforts do we made to overcome the danger of **trap seals** being **broken by evaporation?** Now, what would be the condition of a house that has been closed for three months in summer? Would not every trap in that house be dry? When that next job is finished, and while all the traps are unsealed, **just make a little smudge** in the lower end of the house drain and **see if it goes** out at **the trap of the stack when it should.**

It has been my experience that whatever draft was in the fixtures, under such circumstances, was **invariably the wrong way,** that is into the rooms. **Malt.**

### HOW TO MAKE A RUST JOINT.

**Lansing, Mich.**—To the Editor of "Domestic Engineering." Sir: In an early issue of your reliable paper will you kindly tell me how to make a rust joint, and greatly oblige, **Steady Reader.**

Rust joints are made by using iron chips, or borings, sal ammoniac and flowers of sulphur. Be sure that there is no oil or grease in the iron borings. Take about ten pounds of the borings, two ounces of flowers of sulphur and two ounces of sal ammoniac. Mix dry very thoroughly. Then wet the mixture until it becomes a thick paste and calk it into the hub.

### HOW TO PROPORTION THE SIZES OF WATER SUPPLY PIPES?

269.—**Boston, Mass.**—To the Editor of "Domestic Engineering." Sir: Can you suggest some practical way of proportioning the sizes of water supply pipes, or can you recommend some good book which will give me the necessary information?

It seems to me that the average draftsman, journeyman or master plumber just makes a guess when he sizes a plan.

The point is this: Suppose I have a plan all laid out with bath rooms, kitchens and laundries scattered through the building, the cold water coming direct from the street pressure and the hot water from a hot water tank located in the cellar, with a return back to the boiler, how should I commence to size up such a plan? Your information on this subject will no doubt assist a good many people who are in the same predicament as yours truly, **S. H.**

I would go at the job and find out. On page 10, issue of October 2, 1909, of "Domestic Engineering" is a table regarding the flow of water through pipes at a velocity of 100 feet per minute. If you do not know how much water will flow through a ½ or ¾-inch pipe at whatever the pressure may be in Boston, open some pipe, full size, at a sink and measure the water that flows in sixty seconds. You will then know how much water comes forth in that time.

If you have the result on any **one size of pipe** it is an easy matter to find out any other sizes by looking up the tables of space in various pipes. These tables are found in some arithmetics and many heating books and catalogues. Now the tank of an ordinary closet varies in the amount of water it uses to each flush, according to **how** the tank may be adjusted to fill; but a safe estimate would be about six gallons. The lavatory will take one gallon (quite full), the bath tub twelve gallons, and the sink about two gallons, and two stationary tubs six gallons apiece, total thirty-three gallons. You have there a fair average amount of water that an ordinary plumbing installation would take at what we might call one **direct pull** on the pipe. If there were ten bath room outfits it would be ten times as much, or 330 gallons.

The question arises, **would all these fixtures ever be**

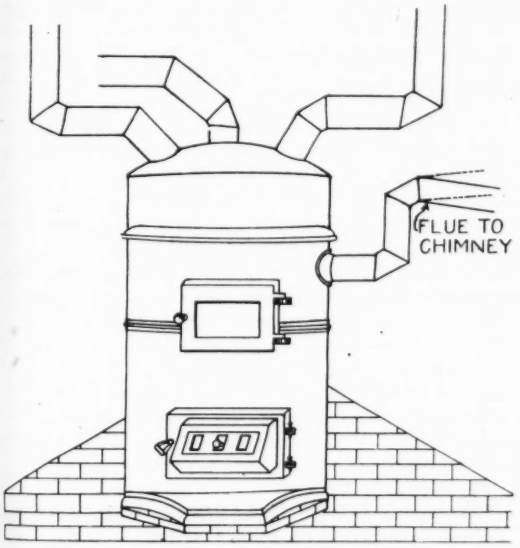
in use **at the same time?** I do not think so. It would be a safe shot to assume that at some time or other **at least** fifty per cent of them **might,** and I would base my calculations upon that condition and go ahead and sling in the correct size of pipe accordingly.

We should be glad to hear from some of the boys, with facts and figures upon this very important point, from jobs that they have put in and noted the results.

### WHY DOES THIS FURNACE SMOKE?

**266.—Baltimore, Md.**—To the Editor of "Domestic Engineering." Sir: Will you kindly tell in your excellent journal why this furnace smokes and how I can remedy the defect? I attach a sketch on which you possibly can indicate the easiest and cheapest way of effecting a cure for this sick job. **S.**

This furnace smokes because the smoke pipe pitches in the wrong direction. The drawing shows that it is




Sketch showing furnace installation which smokes and dotted lines suggesting remedy.

not even level. If the length of the smoke pipe is any guide we would also be inclined to believe that the furnace is located too far from the chimney.

Cut a new smoke pipe hole in the chimney higher up and give the smoke pipe an upward pitch of at least one foot, as suggested by the dotted lines, and if the furnace is cleaned out it will not smoke any more.

### CONNECTING AN INDIRECT RADIATOR.

**267.—Denver, Colo.**—To the Editor of "Domestic Engineering." Sir: Can an indirect radiator be connected to heat in a satisfactory manner by steam upon the one-pipe plan? Kindly answer in your "Questions and Answers" column at an early date, and oblige,

**Information.**

It depends upon the type of radiator and also upon its height above the water line of the boiler. If the sections can be connected in such a manner that they will drain back to the point where the steam enters, all well and good, provided the radiator can be hung so that the bottom of the sections are at least 14 inches above the boiler's water line. The supply pipe should be run one size larger than the indirect needs to be, when connected on the two-pipe plan. For instance, if the indirect when installed upon the two-pipe plan was provided with an inch and a quarter steam supply pipe, in connecting upon the one-pipe plan it would be desirable to provide an inch and a half steam supply pipe. These points are well worth knowing, for many times an indirect has to be placed where it is almost impossible to get the return back to the boiler in a practical manner when it might be proper and practical to put in the indirect radiator upon the one-pipe plan.

### THE GREASE TRAP.

**267.—Madison, Wis.**—To the Editor of "Domestic Engineering." Sir: Will you kindly explain why it is necessary to use a grease trap in connection with a plumbing job, and oblige, **New Reader.**

When the water passes out of the sink in ordinary practice, it contains more or less grease. As this passes along the waste pipe it congeals and collects along the side of the pipe, which in due time becomes stopped up entirely and must then be cleaned in some manner. A grease trap is used to congeal and retain the grease before it enters the waste pipe, in which case the grease in the trap can easily be removed, thus preventing the waste pipes from being obstructed by grease.

### REPAIRING A LEAK IN A RANGE BOILER.

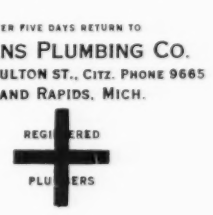
**263.—Lansing, Mich.**—To the Editor of "Domestic Engineering." Sir: Will you kindly tell me some handy, quick and easy way to repair small leaks in range boilers, and greatly oblige, **Wolverine.**

It depends on where the leak is located. If along a seam, probably the quickest way would be to solder it, but if it is in some place where the hole could be enlarged, I would cut off the water and ream out the hole enough to take an ⅛ or ¼-inch tap and tap the boiler and insert the plug. The projecting plug can be sawed off even with the surface of the range boiler by a hack saw and thus make a smooth and mechanical-looking job.

## Live Suggestions

### LETTERHEAD AND ENVELOPE EMBLEM.

The Citizen's Plumbing Co., of Grand Rapids, Mich., use a red cross on their letterhead and envelope in an effective manner. We reproduce herewith the entire corner of the envelope, but, of course, the red cross shows in black, due to processes in engraving, and the missing letters form the words "Registered Plumbers;" the cross was printed first in red and the black printed on top of it. There also is the word "sanitary" printed in black across the horizontal bar of the cross.



# WHOLESALE PLUMBING AND HEATING NEWS

## The McCrum-Howell Co., of New York, Norwich, Conn., and Uniontown Pa., increases its capitol stock to three million dollars.

## The National District Heating Association holds its first regular meeting at Columbus, Ohio.

### McCRUM-HOWELL CO. INCREASE CAPITAL STOCK AND PLAN LARGE IMPROVEMENTS.

**The McCrum-Howell Co.**, of Park avenue and Forty-first street, New York City, manufacturers of "Richmond" boilers, radiators and enameled ware, with two plants at Uniontown, Pa., and one at Norwich, Conn., have just increased their capital stock from $1,200,000 to $3,000,000. The entire increase of preferred stock was purchased by Gavet & Porter, Boston; George H. Burr & Co., New York; Farson, Son & Co., Chicago, and Scully, Painter & Beech, Pittsburg, whose favorable attention to the company was attracted by its progressive methods. The bankers represented in this purchase of stock recently made a visit to Uniontown, for an inspection of the plants of the company located there, and were most favorably impressed with the size of these plants, the evidences of good management, the thorough organization and efficiency of the men and manufacturing equipment. The increase in capitalization was authorized at a recent meeting of the stock holders at which time it was also authorized that the dividend rate on the preferred stock be increased from 6 per cent to 7 per cent. The foundry for big tubs in the enameled ware plant will be lengthened 120 feet, with a new foundry half that size for lavatories. The foundry at the radiator plant will also be extended so as to increase the production materially. The company was not able to take nearly all the business in radiation offered it this year, although its capacity was increased one-third only a year ago. The contemplated increase will add about one-fourth to the capacity. The proceeds of the increase of stock will be used to anticipate a bond issue which has not matured, and also to provide additional working capital.

### NEW HEATING SOCIETY HOLD ITS FIRST REGULAR MEETING.

**The National District Heating Association** held its first regular meeting at the Southern Hotel, Columbus, Ohio, November 10 and 11, with nearly forty delegates present. This association came into existence at the convention of the Ohio Electric Light Association, held at Toledo, Ohio, July 13, 14 and 15, last summer, and its objects are: "To foster and promote the common interests of members, **to advance the scientific and practical knowledge in all matters relating to hot water and steam heating, especially district or central station heating;** also to establish cordial and beneficial relations with kindred associations and between manufacturers of heating equipment and appliances and installers of same and the members of this association." The association is to consist of "active, associate and honorary members, eligibility to the first being any person, firm or corporation directly interested in the capacity of owning, operating or directing an installation or system in district heating; also those interested in heating not directly connected in manufacturing heating appliances. Associates are those manufacturing, supplying or installing anything pertaining to district heating or doing business with the heating companies. Honorary members are those, who by their superior or recognized attainments in engineering, those making scientific discoveries or research and those whose special efforts shall commend them to the association." Annual dues for active members are $5 and for associates $10, while honorary members pay no dues. Among the papers read at the meeting at Columbus were: "The Determination of Deterioration of Underground Heating Mains," by Prof. W. A. Knight, of the Ohio State University; "Thermostats and Thermostatic Action," by W. E. Taylor, of Toledo; "Air Leakage around Windows, Its Prevention and Effect on Radiation," by Harold McGeorge, of Cleveland; "The Advantages of Steam Heating to Electric Generating Companies," by W. J. Kline, of the American District Heating Company, of Lockport, N. Y.; and "Heating and Ventilation of a Modern Building," by H. W. Woodward, of Cleveland. At the last session of the convention the following officers were elected for the ensuing year:

**President, A. C. Rogers,** Toledo, Ohio.

**Secretary-Treasurer, D. L. Gaskill,** Grenoble, Ohio.

**First Vice-President, J. H. Harding,** LaPorte, Ind.

**Second Vice-President, H. W. Hillman,** Grand Rapids, Mich.

**Third Vice-President, F. E. Reidhead,** Paducah, Ky

**Executive Committee: Grant Miller,** of Toledo, O., **and W. A. Walls,** of Columbus, O.

The next meeting will be held at Toledo, O., in May, 1910.

**Those in attendance were:**

A. C. Rogers, Toledo, Ohio, Railway & Light Company.
A. P. Biggs, Detroit, Mich., Central Heating Company.
H. W. Hillman, Grand Rapids, Mich., Grand Rapids-Muskegon Power Company.
A. L. Bailey, Penn Yan, N. Y., Penn Yan Steam Heating Company.
Robert Ilett, Toledo, Ohio, Electric Heating Company.
F. E. Reidhead, Paducah, Ky., Paducah Light & Power Co.
G. M. Clapp, Middletown, Ohio, Washington Power & Electric Company.
E. P. Sawyer, Pittsburgh, Pa., Best Mfg. Company.
W. H. Harrell, Chicago, American Radiator Company.
J. H. Harding, La Porte, Ind., La Porte Electric Company.
J. W. McNamara, Detroit, Mich., Central Heating Company.
George D. Higgins, Detroit, Mich., Murphy Heating Company.
E. C. Adams, Detroit, Mich., Anchor Packing Company.
F. A. Kohl, Detroit, Mich., Anchor Packing Company.
A. D. Spencer, Detroit, Mich., Central Heating Company.
R. M. Stackhouse, Chicago, Holland Radiator Company.
B. B. Gifford, Chicago, Central Station Engineering Company.

Harold McGeorge, Cleveland, Ohio, Metal Weather Strip Company.
Homer Whelpley, Cleveland, Ohio, Strong, Carlisle, Hammond Company.
P. S. Aultman, Springfield, Ohio, Springfield Light, Heat & Power Company.
T. L. Johnson, Columbus, Ohio, Columbus Railway & Light Company.
W. J. Kline, Lockport, N. Y., American District Steam Company.
C. R. Bishop, Lockport, N. Y., American District Steam Company.
F. C. Reeder, Knoxville, Tenn., Fulton Company.
Wm. E. West, Pittsburgh, Pa., American Radiator Company.
Wm. E. Taylor, Toledo, Ohio, National Regulator Company.
M. W. Campau, Detroit, Mich., Central Station Steam Company.
C. H. Statler, New York, H. W. Johns-Manville Company.
A. A. Forhsee, New York, H. W. Johns-Manville Company
A. N. Cope, Springfield, Ohio, Springfield Steam, Heat & Power Company.
H. C. Kimbrough, Chicago, Economy Heat & Electric Company.
C. C. Patton, Columbus, Ohio.
Joseph Graham, New York City.
H. E. Hall, Cincinnati.
Jos. H. Meyer, Detroit, Mich., the V. D. Anderson Company.
Chas. E. McFarlan, Cincinnati, Wm. Powell Company.
Chas. G. Richardson, Providence, R. I., Builders' Iron Foundry.
Prof. W. A. Knight, Columbus, Ohio, Ohio State University.
F. B. Dunlap, Birmingham, Ala., Birmingham Railway, Light & Power Company.
J. W. Jones, Canton, Ohio, Canton Electric Company.
D. L. Gaskill, Grenoble, Ohio, secretary Ohio Electric Light Association.
Geo. Senft, Coshocton, Ohio, Coshocton Lihgt & Heat Company.

## BRASS MANUFACTURERS TO MEET IN NEW YORK CITY.

**The National Association of Brass Manufacturers** will hold its annual meeting at the Hotel Astor in New York City on Tuesday and Wednesday, December 7 and 8. Officers for the coming year will be elected and the meeting will also receive the final report of the List Committee, which had charge of the publication of the new official catalogue.

## THOMAS F. PAYNE JOINS THE "STANDARD."

**The Standard Sanitary Manufacturing Company,** of Pittsburg, Pa., has, in the person of Thomas F. Payne, the well-known inventor and sanitary engineer, made another acquisition to its already large force. Mr. Payne is the inventor of the Payne Self Closing Basin Cock, the Payne Metric Closet Flushing Valve, and other well known specialties. His connection with the "Standard" Company became effective November 1, although prior to that time he had done some preliminary work for the company. Mr. Payne becomes superintendent of the "Standard" Closet Department and sanitary engineer for the company, in which lines his work will be of a broad and general nature. Previous to joining the "Standard" organization, Mr. Payne was for several years head of the plumbing department at the Carnegie Technical Schools, Pittsburg, and was also engaged in the sanitary engineering of the work of Architects Palmer & Hornbostel and Jansen & Abbott. In the latter connection Mr. Payne prepared the plumbing plans and specifications of the School of Mines Building of the University of Pittsburg, costing $200,000; Pittsburg Athletic Association Building, costing $1,000,000; School of Applied Science of Carnegie Technical Schools, costing $1,000,000; Margaret Morrison School, costing $400,000; Allegheny County Soldiers' Memoral, costing $1,000,000; Machinery Hall, Carnegie Technical Schools, costing $400,000; the New York State Educational Building, Albany, N. Y., costing approximately $5,000,000, and various other buildings in Pittsburg and elsewhere. At the present time approximately 1,000 pairs of his self-closing basin cocks are being installed in the 25-story Oliver Building of Pittsburg and 150 of his closet and urinal valves are going into the New York State Educational Building at Albany, N. Y. Mr. Payne's first and most important work with the "Standard" Company will be that of superintending the manufacture of the complete line of "Standard" closets, which the "Standard" people are placing on the market. The closet department will be

**Thomas F. Payne, of Pittsburgh.**
Superintendent of the closet department and sanitary engineer for the Standard Sanitary Mfg. Company.

carried on at the Preble Plant of the "Standard" Company, Pittsburg, and when in complete operation will have a very large output. The Preble Plant is a well constructed 3-story and basement brick building, measuring 50 feet in width by 175 feet in length. It has its own railroad siding, is equipped with modern machinery operated by electricity, electric elevator, steam heat, fire sprinkling system and other modern facilities. The "Standard" Company has obtained the sole right to manufacture and sell the articles upon which Mr. Payne has obtained patents and upon which patents are pending. Among the buildings in which Mr. Payne's specialties have been installed, or are specified for, are the Pittsburg Athletic Association Building, School of Science of the Carnegie Technical Schools, Allegheny County Soldiers' Memorial Hall, Taxicab Building, Curry Building, Oliver Office Building and the Fort Pitt Hotel, Pittsburg. In his new position Mr. Payne

will be associated with E. F. Gregg, for many years assistant to First Vice-President Francis J. Torrance, and lately appointed manager of the Closet and Specialties Department, at the same time retaining his position as assistant to Mr. Torrance.

### ERECTING ANOTHER ADDITION.

**The Knott-Van Arnam Mfg. Company,** of Fort Wayne, Ind., is building a new addition to its plant, which, when finished, will give the company considerably more capacity in its woodworking and finishing departments.

### DECIDE TO CLOSE HAVANA BRANCH.

**Knight & Wall,** jobbers in machinery and mill supplies at Tampa, Fla., and Havana, Cuba, have decided to close out their business in the latter place.

### TO MAKE HOT WATER RADIATORS.

**The Peerless Sanitary Hot Water Radiator Company** was last week incorporated under the laws of the state of Delaware with a capital of $250,000. The incorporators are E. G. Harrison, D. B. Harrison and J. W. Ebbs, all of New York City.

### WELL REPRESENTED IN PARADE.

**The Camden Pottery Company,** of Camden, N. J., were very much in evidence in the recent industrial parade in that city. A handsomely decorated float showed to advantage a number of their "Capoco" fixtures.

### ERECT WAREHOUSE AND OFFICE BUILDING.

**The Keystone Supply & Manufacturing Co.,** of Philadelphia, Pa., is erecting a five-story brick building at 917 to 941 North Ninth street, to be occupied by this concern as a warehouse and office building. The new building will have a good siding on the Philadephia & Reading Railroad and will cost about $45,000.

### THE CHICAGO PLUMBING SUPPLY BOWLING LEAGUE.

**The weekly tournament** of the Chicago Plumbing Supply Bowling League at Schindler's alleys, Huron street and Milwaukee avenue, on Thursday evening, November 18, was a most enjoyable one. All the teams were fully represented and they all had rooters in attendance who did their duty enthusiastically and enjoyed a fine series of bowling games. The honors of the evening were carried off by L. Wolff Mfg. Co.'s team with an average of 915 for the three games. By this master-stroke the Wolff team took the lead of the league with two games to the good. Wm. C. Faehse, secretary of the league, was the individual star of the evening's series of games with scores of 197, 246 and 183, an average of 208 2-3. The score card for the evening reads as follows

| | 1st game. | 2nd game. | 3rd game. |
|---|---|---|---|
| L. Wolff Mfg. Co. | 915 | 937 | 892 |
| Federal-Huber Co. | 767 | 804 | 852 |
| Cameron Schroth Cameron Co. | 842 | 877 | 814 |
| Western Plumbing Supply Co. | 638 | 740 | 667 |
| Illinois Malleable Iron Co. | 740 | 749 | 839 |
| Weil Bros. | 711 | 680 | 559 |
| Republic Mfg. Co. | 727 | 711 | 716 |
| Davies Supply Co. | 667 | 797 | 636 |

# THE METAL MARKET

### NEW YORK METAL MARKET, NOVEMBER 23.

| | | |
|---|---|---|
| Copper, Prime Lake | $13.70 | to $14.00 |
| Copper, Electrolytic | | 13.62½ |
| Lead | | 4.40 |
| Spelter | | 6.42½ |
| Antimony, Cooksons | | 8.37½ |
| Straits Tin | | 31.50 |

### CHICAGO IRON MARKET, NOVEMBER 24.

| | | |
|---|---|---|
| Lake Superior Charcoal | $19.50- | $20.00 |
| Southern, No. 2 Foundry | | 19.35 |
| Northern, No. 2 Foundry | 19.00- | 19.50 |

**November 24, 1909.**

Foundry Iron was the same as the week previous.

$2 more a ton than year previous.

Copper was 1 cent more a lb. than month previous.

½ cent less a lb. than the year previous.

### NEW YORK OLD METAL MARKET.

**New York.**—Dealers' buying prices are as follows:

| | | |
|---|---|---|
| Heavy crucibled copper | $12.25 to | $12.50 |
| Uncrucibled heavy copper | 12.00 | 12.25 |
| Light copper | 11.00 | 11.25 |
| Plumbers' cocks and faucets | 9.50 | 10.00 |
| Heavy brass | 8.75 | 9.00 |
| Light brass | 6.75 | 7.00 |
| Heavy lead | 4.25 | 4.30 |
| Tea lead | 4.00 | 4.10 |
| Solder joints | 6.50 | 6.75 |

### CHICAGO OLD METAL MARKET.

**Chicago, Ill.**—Dealers' buying prices are as follows:

| | | |
|---|---|---|
| Clean heavy copper and trolley wire | $11.75- | $12.00 |
| Light copper | | 10.75 |
| Heavy yellow brass | | 8.50 |
| Light brass | | 6.75 |
| Heavy lead | | 3.90 |
| Tea lead | | 3.50 |
| Block tin pipe | | 26.50 |

### COPPER SITUATION VERY QUIET.

**New York, N. Y.**—It is hard to conceive of any development that would have had a more direct effect on the present copper situation than the Standard Oil decision which was announced last Saturday, says "The American Metal Market." The predominating feature of the market for two weeks or more has been the proposed copper combination, and the price of the metal has advanced almost entirely on the reports that an important merger would be effected. Now this new development has come up that may complicate and possibly indefinitely postpone the merger, for it is unnatural to believe that any attempt will be made to launch a new gigantic trust until the decision of the Circuit Court in the Standard Oil case has been passed upon by the Supreme Court. Inasmuch as the securities of the fourteen companies who have been mentioned as being absorbed in this combination have increased in value over **93 million dollars** within thirty days, there is no difficulty in the metal trade realizing that the copper situation at present is more important in its Well street aspect than in anything connected with the con-

sumption or production of the metal. The market is very quiet. Producers and sellers naturally have been very firm in their prices and views, trying to ignore the changed aspect of the meger proposition.

### THE IRON MARKET SITUATION.

**Cincinnati, O.**—Buying continues in fair quantity without undue excitement, and movement of iron on contracts is progressing in good shape. Sales of steel making iron continue wherever there is any metal available and business in small lots of foundry iron for prompt or this year's shipment is being done. As yet there has been no general movement toward opening order books for last half of 1910, although there has been a growing number of inquiries for this class of business. In spite of the increased productive capacity and blowing in of furnaces from time to time which have been idle and unable to operate successfully on a market such as we have had, consumption is ahead of it and likely to so continue. It is an established fact that during the last two years, with material and labor at a low cost and readily available, consumers have been enlarging their capacity anywhere from small amount to two and three times what they melted in 1906 and 1907. This has been going on quietly, and, of course, it will be impossible to tell the aggregate increase for some time yet, but that it has been enough and more to take care of any increase in productive capacity in the country during that time seems to be established.

# PERSONAL MENTION

**Geo. F. Downe** is still in Canada and it is rumored that he is interested in a merger of Canadian radiator and boiler enterprises.

**S. F. Butterworth,** treasurer of M. Glauber & Company, of New York City, was in Washington, D. C., this week in the interests of his company.

**E. K. Lanning,** advertising manager for Warren Webster & Company, of Camden, N. J., was in Chicago this week in the interests of his company.

**Adolph Mueller,** president of the H. Mueller Mfg. Company, of Decatur, Ill., was in Chicago the early part of this week and called on some of his many friends in the trade.

**Thomas G. Knight,** of Brooklyn, N. Y., is at present enjoying the local amusements of St. Petersburg, Florida. He will proceed to Titusville in December to unmoor his boat and will probably be joined by E. F. Haff, of F. N. DuBois, as usual.

**John Anness,** who has been identified with Richardson & Boynton, New York City, for the past twenty-eight years, will retire on January 1, next. Mr. Anness is seventy-seven years old and has been connected with the **heating trade** sixty-eight years. For a number of years and at the present time he has charge of the sales department on the display floor of Richardson & Boynton. Upon his retirement Mr. Anness will spend four or five months in California and upon his return East will take up his residence at the Fairmont apartments in Jersey City, N. J.

# ASSOCIATION NEWS

### HOLD A MOST SUCCESSFUL SMOKER.

**Chicago, Ill.**—The Chicago North and Northwest Side Master Plumbers' Pleasure Club held a most pleasant and enjoyable smoker at its club rooms at 1514 Milwaukee avenue on Wednesday evening, November 24. The great event will be reported in next week's issue.

### WILMINGTON PLUMBERS' ANNUAL DINNER.

**Wilmington, Del.**—The Master Plumbers' Association of this city held its annual dinner at the Hotel W. Imington on Thursday evening, November 18, with about forty members present. The committee in charge of the event was composed of George C. Hutton, Edward P. McKay, George Barlow, Daniel Krapf and John Wigglesworth.

### PLUMBERS TO REGISTER BEFORE DEC. 20.

**Boston, Mass.**—Edward C. Kelley, secretary of the new state board of examiners of plumbers, has given notice that all plumbers must be registered with the state board before December 20. Examinations have been held in several sections of the state and many have already secured their certificates, but there are still a large number of plumbers who have not compli ed with the new law.

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### CONVENTION DATES.

December 7 and 8, 1909.—Annual meeting of the **National Association of Brass Manufacturers,** at the Hotel Astor, New York City.

January 18, 19 and 20, 1910.—Sixteenth annual meeting of the **American Society of Heating and Ventilating Engineers,** in New York City. The sessions will be held in Engineering Societies Building, 29 West 39th street.

January 20, 21 and 22, 1910.—Fifth annual meeting of the **American Society of Inspectors of Plumbing and Sanitary Engineers, at Trenton, N. J.**

March 8 and 9, 1910.—Annual convention of **New York State Association of Master Plumbers,** in New York City.

# OBITUARY

**Alexander Cameron,** a prominent master plumber, passed on Saturday morning, November 20, at his home, 241 West 120th street, New York City, after an illness of only three days. Mr. Cameron was in his fifty-fourth year and has been connected with the plumbing trade since 1880. He was a member of the Master Plumbers' Association and a number of his fellow craftsmen of that organization attended his funeral, which was held from his late residence on Monday, November 22.

**Patrick O'Connor,** who conducted a general plumbing business for more than twenty years at 28 College street, Providence, R. I., passed on at his residence, 298 Hope street, in this city, on November 15. He had been ill for some time and had not been active in his business for several months. He was born in Cork,

Ireland, in 1833, and came to Providence when quite young, engaging in the plumbing business soon after his arrival. He is survived by one son, Charles M. O'Connor, who is engaged in the plumbing business, a sister and brother.

# NEW YORK NEWS

**New York, N. Y.**—E. Spindler, formerly located at 255 West Twenty-seventh street, has fitted up a most attractive office and showroom at 325 West Twenty-ninth street, which he now occupies.

**New York, N. Y.**—Andrew H. Brown, of 718 Lexington avenue, is installing the plumbing and steam heating in Stephen C. Millett's new residence at Irvington, N. Y., and the plumbing in the Jewish Protectory at Hawthorne, N. Y.

**Brooklyn, N. Y.**—John P. Cash Plumbing and Heating Company, of this city, has been incorporated with a capital of $5,000. The incorporators are John P. Cash, A. M. Cash, both of 355 144th street; Charles Kamper, of 572 Sixth avenue; all of Brooklyn.

**New York, N. Y.**—The Kenney-Rennier Co., of 135 West Twenty-fourth street, has some nice plumbing contracts, among them a school and rectory at St. Nicholas avenue and 175th street; South Church, rectory and parish house at Eighty-fifth street and Park avenue; and alteration work at Bellevue hospital.

**New York, N. Y.**—J. J. Falihee, of 203 West Eighty-second street, and Thomas F. McCaul, formerly of 2155 Seventh avenue, this city, have gone into partnership and are located at Mr. Falihee's address. Both gentlemen are at present finishing their old contracts individually and will shortly be doing business under the firm name of Fahilee & McCaul.

**New York, N. Y.**—Rubin & Marcus, who for several years have carried on an extensive plumbing business at 169 East 112th street, will remove this week to 1480 Washington avenue, the Bronx. Almost all their work lately has been confined to that section of the city and the change will be most convenient. This firm is about to commence operations on the plumbing in two apartment houses on Belmont avenue, two on Crescent avenue and two on Fulton avenue, also a dwelling on 153rd street.

**New York, N. Y.**—Canavan & Deigan, of 104 West 100th street, have enjoyed a most gratifying season and at present have the following plumbing contracts, which will keep them busy for some time: The Alyn Court apartments at Fifty-eight street for The Hedden Construction Co.; two apartment houses at Broadway and 158th street for McMarrow Construction Co.; an eight-story apartment at 526 West 113th street for Mulligan & Moller; a six story apartment on West 156th street for Gross & Herbener; four six-story apartment houses for the City Surburban Home Co. at Seventy-ninth street and Avenue A.; two four-story apartments at 182nd street and Featherbed Lane for J. H. Havens, and a six-story apartment house on Fort Washington avenue for Dongan Construction Co.

# SOUTHERN NOTES

**Dublin, Ga.**—H. M. Kirke, of this city, has been awarded the contract for the plumbing and steam heating in the new hotel now being built here. The consideration is about $2,000.

**Louisville, Ky.**—F. A. Schardein & Sons of Sixth street, have secured the following contracts: Steam heating system in the workshop and printing building of the Masonic Widows' and Orphans' Home, $1,500; plumbing and heating in M. Desopa's flat and store building, $3,000; hot water heating system in Dr. J. R. Hauss' residence at Sellersburg, Ind.

**Jacksonville, Fla.**—Coons & Golder, of 22 West Adams street, are installing a steam heating plant in the Leon Hotel at Tallahassee, Fla., and plumbing and heating systems in a bank and three business blocks at De Land, Fla. This firm reports business 40 per cent larger than last year, and it is of the opinion that this will be the most prosperous year Florida has ever had.

# PUBLIC COMFORT STATIONS

## FOR MORE PUBLIC COMFORT STATIONS IN BOSTON.

**Boston, Mass.**—The United Improvement Association of this city is gathering data on the cost of building and maintenance of public comfort stations in an effort to bring about the establishment of a greater number of these conveniences in this city. Mortimer L. Berkowitz, of 8 Beacon street, who is the executive secretary of the association, has been asked to prepare a plan for their establishment to be presented to the Board of Health in the near future.

## THE BEST FLOORS FOR PUBLIC COMFORT STATIONS.

**Baltimore, Md.**—Thos. M. Beadenkoff, superintendent and secretary of the Free Public Bath Commission of this city, is compiling information about **the best material for floors in public comfort stations,** and he has, with this end in view, corresponded with the proper officials in the larger cities of the country. Probably the most valuable information secured thus far was contained in a letter from Chas. B. Ball, chief sanitary inspector of Chicago and president of the American Society of Inspectors of Plumbing and Sanitary Engineers, who wrote that in his opinion "it is entirely practicable to provide an asphalt-mastic floor which will be more impervious than a cement floor and more grateful to the feet of the attendants, and such a floor is not, at the present time, of very exceptional expense. There are certain other monolithic floors, notably those made under German patents from imported material, which will stand wear and are altogether impervious."

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**Need a Cornice Brake in Their Business.**

**John H. Taylor & Bro.,** 219 Glenridge avenue, Montclair, N. J., are in the market for an 8 or 4 ft. cornice brake.

# MIDDLE STATES

**Toledo, O.**—The Borchard Roemer Company, of this city, has changed its name to the Ohio Plumbers' Supply Company.

**Cincinnati, O.**—The Peck-Hammond Company, of this city, has been awarded the contract for the installation of a steam heating system in a new public school at Mobile, Ala.

**Lafayette, Ind.**—Lane-Pyke Company, of this city, has secured the contract for the plumbing and wiring of the new high school building at Peru, Ind. The consideration is $8,987.

**Columbus, O.**—The Samuel A. Esswein Company, of this city, has secured the contract for the plumbing in the new cell block at the state penitentiary. The consideration is $8,460.

**Columbus, Ohio.**—F. Schattenburg, of this town, has secured the contract for the installation of a heating plant in the Etropia building at 85 South Main street. The consideration is $2,400.

**Grand Rapids, Mich.**—Sproul & McGurrin, of this city, have secured the contract for the plumbing in the extension to the Federal building at Detroit. The consideration amounts to $10,000.

**Toledo, O.**—Bryce Heating and Ventilating Company, of this city, has been awarded the contract for heating and ventilating the new high school building at Peru, Ind. The contract amounts to $12,745.

**Lima, O.**—Clark & Jones, of the Faurot Opera House block, have been awarded the contract for the heating of the Deisel-Wemmer Cigar Factory on North Main street. This firm also has secured the contracts for heating public school buildings at Elmer, O., and Vermillion, O.

# NOTES FROM THE WEST

**Salina, Kansas.**—Lowell & Company will soon open a plumbing establishment at 124 South Seventh street.

**Clay Center, Kan.**—W. F. Miller has purchased the business and stock of the Clay Center Plumbing Company, and the transfer has taken place. Mr. Miller will remain in the old location on Grant avenue for the present.

**St. Louis, Mo.**—Simpson & Wise is the style of a new plumbing firm which has opened an up-to-date establishment at 5993 Plymouth avenue. The new firm would like to receive catalogues of plumbing goods from manufacturers and jobbers.

# THE GREAT NORTHWEST

**Maryville, Wis.**—Al. Sonn and Emil Friebel have formed a partnership under the name of Sonn & Friebel and have opened a plumbing establishment in the Music block.

**Wausau, Wis.**—Daniel Danielson has been awarded the contract for the installation of a steam heating system in the East Side Engine House. The consideration is $719.

**Great Falls, Mont.**—The establishment of the Collins Plumbing Company, at 16 Third street, South, was last week visited by a fire which caused a damage of about $1,500, fully covered by insurance.

# PACIFIC COAST

**Sacramento, Cal.**—Plans have been completed for the installation of a large filtration plant in connection with the waterworks system in this city. Prof. C. H. Hyde has charge of the preliminary plans.

**San Francisco, Cal.**—It is planned to erect quite a number of large buildings in this city, among them a new theater, work upon which is to be commenced by the first of the year, an immense auditorium, and the Examiner building. Excavations for this latter structure are now being made. There is also talk of a new passenger depot in a new location for the Southern Pacific company, but this plan has not matured.

**San Jose, Cal.**—The announcement is made that the effort to secure an open shop in this city has proved to be a failure. W. G. Mathewson, business agent for the Santa Clare County Building Trades Council, visited the headquarters of the state council in San Francisco recently to confer with Mayor-elect P. H. McCarthy, who is also president of the state council, and O. A. Tvietmoe on the San Jose question. He states that most of the union men in that city are employed and that the contractors who sought to lock out the union

Some of the Chicago delegates to the convention of the National Association of Master Plumbers, held in Detroit last summer. Reading from left to right in the front row are: Stanley T. Loula, E. C. Wagner, treasurer of the Chicago Master Plumbers' Association; and Paul Redieske, honorary member of the Chicago Master Plumbers' Association and Commissioner of Public Works of Chicago. Mr. Loula's children, a boy and a girl, are seen standing behind their father and Mr. Wagner. The photograph was taken by our Mr. T. Raymond Mills.

mechanics have taken no new contracts since the commencement of the trouble, merely finishing up old work.

**Salt Lake City, Utah.**—Midgley Bros., of 22 Richards street, have been awarded the contract for the plumbing and heating in the new dormitory at the Orphans Home and Day Nursery. The consideration is $6,500. This firm also has secured the contract for plumbing and heating Mrs. Edwin Kimball's new apartment house, a $10,000 job; the plumbing and heating the Holmes-Knox hotel, for $30,000; the plumbing and heating in the new Fisher hotel, a $16,000 job.

**San Francisco, Cal.**—At the present time several changes in the building laws are under consideration by the Board of Supervisors that will prove of interest to the plumbing trade. It is proposed that it be required that all building plans must be submitted to the Board of Health for approval as well as to the Board of Public Works before a permit for the erection of the structure will be granted. It is also proposed to extend the height for class "C" structures to 84 feet where metal lath is used.

**San Francisco, Cal.**—Superintendent of Public Schools Roncovieri is becoming very hostile against the proposition of installing steam heating plants in the public school buildings and seems determined to have hot air apparatus installed in buildings erected in the future. Some of the members of the school board are inclined to believe that the entire question was up to the board of public works, but the superintendent insists that the approval of the school board was necessary in all cases. It was finally agreed that the matter should be taken up by the board of public works.

BLANK FOR REPORT

—OF—

**Awards of Heating or Plumbing Contracts**

(Cut out, fill in and mail promptly)

DOMESTIC ENGINEERING
Chicago

We have been awarded the

Plumbing Contract_____

Heating Contract_____

Kind of Building_____

Amount of Contract_____

Owner's Name_____

Architect's Name_____

Address_____

Our Own Name_____

Address_____

# THE OFFICE BOOKSHELF

**"Domestic Sanitary Engineering and Plumbing."** Dealing with domestic water supplies, pump and hydraulic ram work, hydraulics, sanitary work, heating by low pressure, hot water, and external plumbing. By F. W. Raynes, R. P., head of the plumbing department in the Glasgow and West of Scotland Technical College, Glasgow. Longmans, Green & Co., 39 Paternoster Row, London. New York, Bombay and Calcutta, 1909. 474 pages, 277 illustrations. 5½x8¾ inches, cloth bound. Price 10s. 6d. net.

The author, because of his connection with a great technical college, a connection which requires him to teach civil as well as sanitary engineering, is in a position to speak authoritatively on British plumbing practice. His work is intended for students of domestic sanitary engineering, it is true, but more for those who are entrusted with plumbing and heating design, supervision and construction.

A review of the chapter headings will give the American reader a clear comparison between the scope of British practice and that in this country. They are: Materials and their properties; mode of manufacture; roof work; pipe fixing and pipe bending; pipe joints; solders, fluxes and lead burning; sanitary fittings and accessories; soil and waste pipes; drainage of houses and other buildings; disposal and treatment of sewage from mansions and houses in country districts; water supply; appliances for raising water; hydrostatics and hydraulics; domestic hot water supply; low pressure hot water heating apparatus; worked examples; tables.

A glance will show what portions of this work the American plumber is not called upon to do.

In stating the general principles which should govern the construction of sanitary fittings (where we say fixtures) the author says: "*a.* Simplicity of form, being free from complicated and not readily accessible parts. *b.* They should be made of hard, durable material, with smooth and well glazed surfaces, so as to be practically non-porous. *c.* The design should not admit of unnecessary surfaces which are liable to collect dirt, and which require a lot of attention to keep them in a cleanly state. *d.* Their outlets should be formed to enable reliable and simple connections to be made with the pipes into which they discharge."

The author condemns the washout closet as a defective form, in which all agree. He refers to trough closets as "very objectionable." He gives these chief points to consider when selecting semi-circular or radial backed urinals:

1. That they are constructed in well-glazed fire clay or similar ware.
2. That they are made in as few pieces as practicable to limit the number of joints.
3. That they contain the minimum length of channel.
4. That all surfaces which are liable to be wetted with urine are effectively flushed.
5. That the minimum number of traps be used.
6. That the joints are well formed, and that the minimum length of joints come in contact with urine.

# Merchant Instincts

The "merchant instinct" which draws young men into business for themselves—and helps established dealers to grow in commercial strength, is a wide-awake trading ability. It is based not alone on salesmanship, but equally upon a keen discernment in selecting a strong line of salable goods, and in being ready to show and explain the things which best fit the demand.

An attractive display of AMERICAN RADIATORS focuses a general advertising impression into tangible sales.

IDEAL Boilers and AMERICAN Radiators register high water mark among live business getting dealers as a salable line of heating goods. The unstinted praise of satisfied customers and the unceasing demand of house-owners for our widely advertised Low Pressure Steam and Hot Water Heating Outfits are warrants of commercial success which every dealer should heed.

AMERICAN & IDEAL RADIATORS BOILERS

**A Heating Outfit is More Efficient with NORWALL and SYLPHON SPECIALTIES**

AMERICAN RADIATOR COMPANY

**General Offices, 282-286 Michigan Ave., Chicago.**

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| New York | Cincinnati | Cleveland | Atlanta | Brantford, Ont. | Denver |
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| Pittsburg | Buffalo | Indianapolis | Kansas City | Omaha | San Francisco |
| Washington | | | | | |

7. That no part of a channel be difficult to cleanse or be partially obscured from view.

8. That suitable flushing apparatus, together with a liberal supply of water, be provided.

He condemns the standing connected waste and overflow for baths.

Francis William Raynes, R. P., author of "Domestic Sanitary Engineering and Plumbing," just published, is a native of Matlock, Derbyshire, and gained much practical experience of plumbing in Manchester, where he at an early age was appointed workshop instructor in plumbing at the School of Technology and rose to be chief assistant to the head of the Department of Sanitary Engineering. Since 1902 he has been at the head of the Department of Plumbing in the Glasgow and West of Scotland Technical College, Glasgow.

In giving pipe sizes he requires the soil pipe to be 4 inches, the closet bends 3½ inches, and the branch and main vents 2 inches, and this for a four story building.

These views show how interesting and valuable Mr. Raynes' book is.

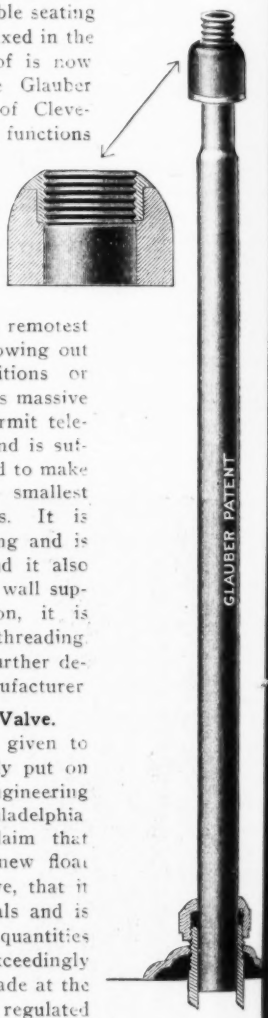
J. K. A.

**Hendrick's Commercial Register of the United States,** eighteenth annual edition, price $10 prepaid. Publishers, S. E. Hendricks Co., 74 Lafayette St., New York. Contains over 350,000 names and addresses of American manufacturers, with 35,774 classifications, representing about every machine, material, apparatus or specialty made, for use in engineering, mechanical, electrical, manufacturing, railroad, mine, quarrying and kindred industries. Under the head of machinery alone there are over 2,700 classifications. The volume has about 1,300 pages, sizes 7¾"x10½", and is substantially bound in cloth. It contains many new names as compared with previous editions.

# WITH THE MAKERS

### A Patent Supply Pipe With Improved Patent Gasket.

A new patent gasket, shown herewith and made of compressible seating material, with a brass seat fixed in the front or top portion thereof is now being manufactured by the Glauber Brass Manufacturing Co., of Cleveland, Ohio. This brass seat functions at the very seating point fully protecting the yielding material against injury. The brass seat is threaded inside—to fit the outside threaded pipe portion, thus effectually preventing, it is claimed, the remotest danger of the connection blowing out even under extreme conditions or pressure. The pipe section is massive and fullest size that will permit telescoping with service pipe, and is sufficiently reduced at upper end to make slip joint connection with smallest sizes of basin cock shanks. It is made of annealed soft tubing and is bendable without injury, and it also is made in angle pattern for wall supply and fits any condition, it is claimed, without cutting or threading. By mentioning this article further details can be had of the manufacturer




### A New Automatic Air Valve.

The "Peco" is the name given to an automatic air valve lately put on the market by The Penn Engineering Co., of 312 Cherry street, Philadelphia Pa. The manufacturers claim that the "Peco" is an entirely new float automatic cast base air valve, that it is made of the best materials and is manufactured in such large quantities that it can be sold for an exceedingly low price. Adjustment is made at the factory and valve can be regulated independently of the packing gland. Opens automatically to permit the discharge of cold air—closes against water by flotation, and against steam by expansion. Another feature claimed as being exclusive with valves made by this company is the "ball joint," which is designed to absolutely prevent leakage. Those interested can get full particulars by mentioning this article and addressing the manufacturer.

### A New Gasket and Washer Cutter.

A machine that will cut washers and gaskets either round or oval in shape is the latest invention for which application for patent has been made by the manufacturer, J. A. Rose, of Hastings, Neb. The machine has two knives, cutting the inside and outside of a washer, round or oval, in one operation. Mr. Rose also makes

six other machines cutting over five thousand different sizes of washers and gaskets ⅜-inch to 36-inch, from any material used for these purposes, including asbestos. In addition to the washer cutters, Mr. Rose makes a glass cutting attachment which is added to the different sizes and will cut glass round or oval, any size. Details can be obtained by writing Mr. Rose and mentioning this article.

# THE SHOP BOOKSHELF

**Being a brief mention of late publications which are worthy of special notice because of their unusual interest to the trade. They should be on "The Shop Bookshelf" in every plumbing and steam fitting establishment for instant reference. A free copy of any publication referred to under this heading may usually be had by mentioning "Domestic Engineering" when you write.**

**From C. M. Kemp Mfg. Co.,** Baltimore, Md.: A 6"x9" catalogue of the "Twentieth Century Gas Producing Apparatus. The booklet contains 24 pages and is well written in that it thoroughly and clearly describes the machine and its operation and in addition to this gives considerable information relative to the production of illuminating and fuel gas of the desired quality and at a minimum of cost.

**From The J. L. Mott Iron Works,** New York City: A 6½"x13" catalogue of electroliers, lanterns and brackets. This very handsome book has 64 pages and is beautifully bound in brown cover stock stamped in gold bronze. There are more than sixty full page illustrations, all half-tones, which show up to perfection on heavy enameled paper. Price list "J" enclosed with the catalogue is a 4¾"x7" booklet of 12 pages, which gives descriptions and prices of the designs illustrated in the catalogue.

**From the American District Steam Co.,** Lockport, N. Y.: Bulletin No. 116, "The Advantages of Central Station Heating to Electric Companies," being a paper read before the New England section of the National Electric Light Association's summer meeting at Portsmouth, N. H., by Charles R. Bishop. The Bulletin is of a size uniform with the others issued by this company (6"x9"), contains twenty pages. It is replete with suggestions, facts and figures for those interested in central station heating.

**From the Rolf-Martin Co.,** Fort Wayne, Ind.: Catalogue "A," a 8"x10½" booklet comprising several bulletins illustrating and describing Martin's Cellar Traps No. 1, 3 and 12; Romarco Wizard and Junior gas water heaters; Romarco thermostatic valve; the Wayne gasoline range boiler heater; and the "M" backwater trap. The bulletins are full of information about the best ways of doing the things for which the several devices

CAPITOL BOILERS AND RADIATORS

Fire-Pot Section of Capitol Solar Boiler.

A Quick Acting Fire Pot

The basis of any quick acting boiler is the fire pot. Note the fire pot of the Capitol Solar Boiler.

Thin waterways hanging over the fire absorb the heat quickly and compel quick action. The fire chamber is deep to allow a heavy fire, permitting the user to hold fire the maximum length of time. The boiler thus acts quickly and is under perfect control all the time.

The Capitol Solar is the boiler you want to use for your residence heating. 19 sizes steam and hot water.

Catalog and full description on request.

United States Heater Company.

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SALES AGENCIES:

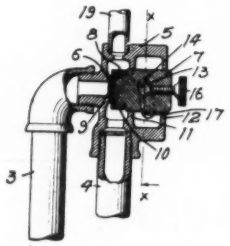
MINNEAPOLIS, MINN., Plumbing & S. F. Supplies Co.
ST. LOUIS, MO., L. M. Rumsey Manufacturing Co.
DENVER, COLO., Kellogg & Stokes Stove Co.
DULUTH, MINN., Duluth Plumbing Supplies Co.

are recommended. They are well written and well illustrated throughout.

**From the Compound Injector & Specialty Co.,** 419 North Fifty-second avenue, Chicago: A large 18"x24" beautifully colored poster, a suitable wall ornament for plumbers' display rooms. In the center is shown side by side interior views of Mr. Slow Boy's flat and Mr. Up-to-date's flat. The latter is equipped with modern sanitary appliances, including Dehn's Acme floor drain. Mr. Slow Boy's flat has an old fashioned drain in the basement which has been rendered useless and the basement is being flooded due to a rat's getting stuck in the drain trap valve. On the margin of the poster are illustrated a large number of the traps, injectors, etc., manufactured by this company.

# PATENTS

**940,295. Valve for Water-Closet Tanks.** John F. Willis, Minneapolis, Minn. The claim made for this invention reads in part as follows: "A ball cock, comprising a casing having inlet and discharge openings, said inlet opening having a valve seat, a valve ar-




ranged to engage said seat and close said inlet opening, a rod mounted in said valve, the wall of said casing having an obliquely arranged slot therein, through which said rod projects, said rod contacting with the inclined surface at the edge of said slot, and a float carried by said rod, substantially as described."

**939,931. Faucet and Hose Coupling.** Hugh P. Towle, San Jose, Cal., assignor of five-eighths to John H. McGehee, San Jose, Cal.

**939,957. Thermostat.** Harry G. Geissinger, West Orange, N. J., assignor to Geissinger Regulator Company, a Corporation of New York.

**939,967. Counterbalancing Device for Pumps.** James O. Bane, Waseca, Minn.

**939,987. Valve.** Clarence A. Dawley, New York, N. Y.

**939,991. Water-Circulator for Boilers.** Charles C. Eckliff, Grand Haven, Mich.

**940,056. Hydraulic Pump.** Augustine J. Pocock, Dayton, Ohio.

**940,098. Device for Joining Parts of Conduits.** George M. Wehrle, New York, N.Y., assignor to National Water Main Cleaning Co., New York, N. Y., a Corporation of Maine.

**940,127. Float-Valve for Water-Tanks.** Edwin N. Campbell, Council Bluffs, Iowa.

**940,155. Thermostatic Valve.** Alexander D. Horne, Glasgow, Scotland.

**940,182. Radiator-Valve.** John B. Morgan and Charles R. Webster, Rochester, N. Y.

**940,202. Low-Water Signal for Boilers.** John L. Setzer, Stanberry, Mo.

**940,240. Instantaneous Water-Heater.** Charles E. Duryea, Reading, Pa.

**940,265. Sectional Asbestos Covering.** William J. Moeller, Hartwell, Ohio, assignor to The Philip Carey Manufacturing Company, Lockland, Ohio, a Corporation of Ohio.

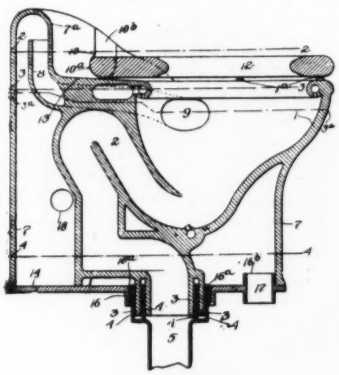
**940,312. Automatic Pumping System.** John Hanson, Auburn, Mass.

**940,385. Fluid-Pressure Valve.** Joseph Folco, Tacoma, Wash.

**$940,556. Faucet.** Andrew J. Robinson, Boston, Mass.

**940,567. Heating Apparatus.** Nathaniel B. Wales, Braintree, Mass.

**940,435. Stool for Water-Closets.** David Craig, Melrose, Mass., assignor to The David Craig Company, a Corporation of Maine. Among the nineteen claims made for this invention probably the broadest reads as follows: "A stool for water closets comprising a bowl made with a skirt surrounding and supporting the same, said skirt being made with integral projection extending above the rim of the bowl, one at either side near the rear, each projection being provided with a socket having a restricted opening and




a relatively large inner end, and a seat having a pair of trunnions removably mounted in said sockets, each trunnion being in the form of a truncated cylinder, whereby it may be passed through the restricted opening of its socket, and when turned in the enlarged inner end will be held therein against dislodgment."

---

**Burlington, Iowa.**—The Russell Sewage Disposal Company of this city furnished the sewerless sewage disposal system which was installed at P. C. Hart's store and residence in Nichols, Iowa.—Adv.

# No Royalty

The Webster "Q R" Modulation System requires no vacuum pumps, and entails no royalty charge. It is sold upon an apparatus basis.

It is the most modern idea in steam heating, the successful development of ideas upon which we have been working, testing and experimenting for years.

It is immeasurably superior to straight gravity heating systems, and has points of merit which place it above hot water systems, due to the "Q R" effect.

It is adapted to residences, flats and apartments, schools, hospitals, store and office buildings, etc., or any building where hot water or low pressure steam is to be considered.

Heating Contractors who have work of this character in view will learn something distinctly to their advantage by communicating with us.

Installations are now in use in all parts of the United States and in Canada, which prove its adaptability to every class of building.

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WANTED—Two first-class representatives by a large manufacturer of boilers and radiators, one for the state of Ohio and one for New York City and contingent territory. Thorough experience in the heating business, both as Engineer and Salesman, required, also a personal acquaintance with the trade in the localities mentioned. State experience, present employment, references and salary desired. Address No. 174, "Domestic Engineering," Chicago.

### For Sale.

FOR SALE—Up-to-date plumbing shop in town of 2,500, seventy miles from Pittsburg. Must sell quick; terms upon application. Address No. 178, "Domestic Engineering," Chicago.

FOR SALE—An A-1 plumbing shop located in one of Iowa's best towns. Will make terms to suit. Address No. 172, "Domestic Engineering," Chicago.

FOR SALE—One No. 02 Loew Hand Pipe Machine, 2½ in. to 4 in., nearly new; one No. 6 Merrell Hand or Power Machine on base 1 in. to 6 in. Write David Ahern & Son Co., Fond du Lac, Wis.

FOR SALE—The controlling interest of the largest and most profitable plumbing and heating business in the middle West. Full payment not necessary. Best of reasons for selling. None but responsible people should apply. Address No. 171, "Domestic Engineering," Chicago.

### Government Proposals.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., November 17, 1909.—SEALED PROPOSALS will be received at this office until 3 o'clock p. m. on the 29th day of December, 1909, and then opened, for the plumbing and marble finish, etc., of toilet rooms for the U. S. Post Office at Denison, Texas, in accordance with drawings and specifications, copies of which may be had at this office or at the office of the superintendent of construction, at the discretion of the Supervising Architect.

JAMES KNOX TAYLOR,
Supervising Architect.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., November 15, 1909.—SEALED PROPOSALS will be received at this office until 3 o'clock p. m. on the 20th day of December, 1909, and then opened for the installation of a hot water heating and ventilating apparatus and pumping plant in the U. S. Post Office at Toledo, Ohio, in accordance with drawings and specifications, copies of which may be had at this office, or at the office of the Superintendent of Construction, at the discretion of the Supervising Architect.

JAMES KNOX TAYLOR,
Supervising Architect.

### Miscellaneous.

WANTED—TO BUY A PLUMBING SHOP in a good town within 150 miles of Chicago. Address 164, "Domestic Engineering," Chicago.

### Plumbing Schools.

LEARN PLUMBING on new buildings in four months. Tools furnished. Master Plumbers' Trade School, 3659 Finney Ave., St. Louis, Mo.

### Books.

**Salesmen's List of Jobbers of Plumbing Supplies.** Bound in cloth; pocket size. Sent postpaid for one dollar. "Domestic Engineering," Chicago.

**Sanitation in the Modern Home.** By Jno. K. Allen. An invaluable guide to the architect, plumber, heating engineer and house owner, telling just what is necessary to make a house completely sanitary from the subsoil to the roof. 8x5¼ inches; 272 pp.; bound in cloth; postpaid, $2.00. "Domestic Engineering," Chicago.

**Roughing-in House Drains.** Edited by Jno. K. Allen. A complete guide to the work of roughing-in plumbing, from the digging of the sewer to the finishing length of the soil and vent stacks, giving each step to be taken and telling how and why it is done. 6¼x4¼ inches; 184 pp.; bound in boards. Postpaid, 50 cents. "Domestic Engineering," Chicago.

**Notes on Heating and Ventilation.** Second edition. By Prof. John R. Allen. Written primarily for the steamfitter and designer of heating systems. Reduced to as brief a form as possible, so that readers can readily find notes or data desired. Bound in cloth, 6¾x4¾ inches; 272 pp.; postpaid, $2.00. "Domestic Engineering," Chicago.

**"Domestic Engineering" Directory.** Published annually in three parts; part I contains directories of great value to the jobber, manufacturer, and dealer in plumbing, heating and mill supply trades; bound in leather, $5.00; part II is illustrative and descriptive of the mentioned trades' specialties; 11¼x8 inches; bound in cloth; part III is in Spanish. "Domestic Engineering," Chicago.

**Dean's Steamfitter's Computation Book.** Contains figured cubical contents of rooms of different sizes and ceiling heights; also tables showing radiation necessary at various rates per square foot of glass surface, wall surface, or cubic feet; also square feet of glass or wall in surfaces of various dimensions; also cost of selling price of radiators at various market prices. These tables save fitters thousands of arithmetical calculations, giving the answers ready to hand. Leather bound; 7¾x5 inches; 90 pp.; postage prepaid, $2.50. "Domestic Engineering," Chicago.

**Dean's System of Greenhouse Heating by Steam or Hot Water.** Directions for obtaining different temperatures; tables of radiation necessary per square foot of glass; tables giving glass surface; sizes of flow and return pipes; explanations so simple all fitters may understand. Cloth bound, 7¾x5½ inches; 46 pp.; postage prepaid, $2.00. "Domestic Engineering," Chicago.

**Tables for Calculating Sizes of Steam Pipes.** By Isaac Chaimovitz. These tables furnish a method of determining sizes of steam pipes for low pressure heating without laborious mathematical calculations; bound in cloth; 4½x6⅞ in.; 47 pp.; postpaid, $2.00. "Domestic Engineering," Chicago.

**Swimming Pools.** By. Jno. K. Allen. Their construction; cold and hot water supply; various methods of heating the water; directions as to selecting correct sizes of heaters. A practical guide to the subject. Over thirty illustrations; 6½x4¾ inches. Postpaid, 50 cents. "Domestic Engineering," Chicago.

**Sanitary Sewerage of Buildings.** By Thos. S. Ainge. An authoritative statement of the principles and practice of sewering buildings, including the design and construction of plumbing systems, disposal of sewage in unsewered localities, etc.; 8x5 inches; bound in cloth; 209 pp.; postpaid, $1.50. "Domestic Engineering," Chicago.


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Patent Dec. 8, 1908

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